
Work Order No. 15730.001.003

**No. 1 and No. 2 Combination Boilers
NESHAPS (Boiler MACT)
Emission Compliance Test Report
New-Indy Catawba, LLC
Catawba, South Carolina
Test Dates: 18-20 February 2020**

Prepared For

NEW-INDY CATAWBA, LLC
5300 Cureton Ferry Road
Catawba, South Carolina 29704



Templeton Simpkins
Project Manager
Approved for Transmittal



Natalie Hammonds
Quality Assurance Manager
Approved for Transmittal

Prepared By

WESTON SOLUTIONS, INC.
1625 Pumphrey Ave.
Auburn, Alabama 36832-4303
Phone: (334) 466-5600 Fax: (334) 466-5660

3 April 2020

WESTON SOLUTIONS, INC. (WESTON®)
INTEGRATED AIR SERVICES – AUBURN OPERATIONS
ACCREDITATION STIPULATION

Laboratory:	Weston Solutions, Inc.
Accreditor(s):	Louisiana Environmental Laboratory Accreditation Program (LELAP) – Laboratory and Emission Testing Practice
Accreditation ID:	LELAP – 03024
Scope:	PM, HCl, Hg, and CO Sampling and Analysis
Effective:	LELAP – 21 December 2001
Expires:	LELAP – 30 June 2020

Data Qualifiers



The following are general reporting notes that are applicable to all WESTON reports, unless otherwise noted.

- **NL** denotes data that was not from a LELAP accredited method.
- **LNL** denotes lab results that are not from an accredited LELAP laboratory.
- **NN** denotes data that was not from The NELAC Institute (TNI) accredited method.
- **NNL** denotes lab results that are not from an accredited TNI laboratory.
- **ED** denotes data that is not to be used for compliance purposes and may deviate from approved procedures.
- **Q** denotes data whose QA/QC check did not fall within the specified range. This data is still considered valid.
- **A** denotes data that is anomalously high with no explanation for the outlier.
- **BDL** denotes values that were below the limit of detection of the analyzer and 2% of the span gas was used to calculate an emission rate.
- **DF** denotes a dilution factor.
- **NAP** denotes emission testing performed by personnel from a non-TNI accredited laboratory.
- **S** denotes analysis that has been subcontracted.
- All values are reported on a “dry” basis, unless otherwise designated as “actual” or “wet” basis.



TABLE OF CONTENTS

SECTION 1	INTRODUCTION.....	6
SECTION 2	RESULTS AND DISCUSSION	7
SECTION 3	SOURCE TESTING METHODOLOGY	14
SECTION 4	QUALITY ASSURANCE/ QUALITY CONTROL	15
	4.1 Quality Control Procedures	15
	4.2 Gas Stream Sampling QA/QC Procedures	15
	4.3 Mercury QA/QC Procedures	20
	4.4 Stack Sample Analytical QA/QC Procedures	23
	4.5 QA/QC Checks for Data Reduction and Validation	24
	4.6 Sample Identification and Custody	24
APPENDIX A SAMPLE CALCULATIONS		
APPENDIX B TEST METHODOLOGY		
APPENDIX C FIELD DATA – NO. 1 COMBINATION BOILER		
APPENDIX D FIELD DATA – NO. 2 COMBINATION BOILER		
APPENDIX E LABORATORY DATA		
APPENDIX F QUALITY CONTROL DATA		
APPENDIX G PROCESS OPERATING/PRODUCTION DATA		
APPENDIX H FUEL SAMPLES LABORATORY ANALYSIS		
APPENDIX I SOOT BLOWING CALCULATIONS		
APPENDIX J EPA APPROVAL LETTER		

LIST OF TABLES

Table 2-1	No. 1 Combination Boiler (Bark and TDF) Summary of PM, HCl, and CO Emission Testing	8
Table 2-2	No. 1 Combination Boiler (Bark and TDF) Summary of Hg Emission Testing	9
Table 2-3	No. 2 Combination Boiler (Condition 1) (Bark and TDF) Summary of PM, HCl, and CO Emission Testing	10
Table 2-4	No. 2 Combination Boiler Condition 1 (Bark and TDF) Summary of Hg Emission Testing	11
Table 2-5	No. 2 Combination Boiler Condition 2 (Bark, TDF, and Oil) Summary of PM, HCl, and CO Emission Testing	12
Table 2-6	No. 2 Combination Boiler Condition 2 (Bark, TDF, and Oil) Summary of Hg Emission Testing	13
Table 3-1	Source Testing Methodology	14
Table 4-1	No. 1 Combination Boiler Summary of Method 5/26A Performance Criteria and Achieved Results	18
Table 4-2	No. 2 Combination Boiler (Condition 1) Summary of Method 5/26A Performance Criteria and Achieved Results	18
Table 4-3	No. 2 Combination Boiler (Condition 2) Summary of Method 5/26A Performance Criteria and Achieved Results	19
Table 4-4	Summary of Field Spike Recovery Test Results	22



SECTION 1 INTRODUCTION

Weston Solutions, Inc. (WESTON®) was retained by New-Indy Catawba, LLC (NIC) to conduct particulate matter (PM), hydrogen chloride (HCl), carbon monoxide (CO), and mercury (Hg) emission testing on the No. 1 and No. 2 Combination Boilers at the mill in Catawba, South Carolina. The purpose of the testing was to demonstrate compliance with the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Industrial, Commercial, and Institutional Boiler and Process Heaters Rules (former Boiler Maximum Achievable Control Technology (MACT)).

WESTON performed the emission testing during 18-20 February 2020. The project team included the following individuals.

Name	Project Role
Templeton Simpkins	Project Manager/Test Team Leader
Tyler Robinson	Test Team Member
Bryan Alldredge	Test Team Member
Matthew Carroll	Test Team Member
Mason Stinson	Test Team Member
Natalie Hammonds	Quality Assurance Manager
Ashley Bryant	Report Coordinator

Mr. Mike Swanson of NIC coordinated the testing with mill operations and served as WESTON's technical contact throughout the effort. Mr. Elton Guinyard of the DHEC was present for a portion of the testing.

The Louisiana Environmental Laboratory Accreditation Program (LELAP) is the accrediting body through which WESTON obtains both its LELAP and TNI accreditations. WESTON is accredited for operations in the states of Texas, Florida, and West Virginia through reciprocity agreements with LELAP.



SECTION 2 RESULTS AND DISCUSSION

WESTON performed the emissions testing program during 18-20 February 2020. All testing was performed by personnel from the WESTON emission testing office located in Auburn, Alabama.

A cyclonic flow check, response time check, and stratification check were performed on the sources. The sources are neither stratified nor cyclonic. Results of these tests can be found in the Quality Control Appendix.

Particulate matter and Hg sample analyses were performed onsite by the WESTON team. Hydrogen chloride sample analyses were performed by WESTON at the Auburn, Alabama laboratory. An acetone front-half rinse was used for particulate sampling as required by subparts governing the sources. Duplicates and spikes were conducted in accordance with Methods 26A and 30B requirements. All duplicates and spikes met the requirements of the methods. Detailed results can be found in the Laboratory Data Appendix.

Tables 2-1 through 2-6 provide detailed summaries of the emission results. Measurement uncertainty is not shown but has been taken into consideration during method development. Any differences between the calculated results presented in the appendices and the results reported in the summary tables are due to rounding for presentation.

During the No. 2 Combination Boiler testing, Run 1 was paused from 0938-0952 due to lost bark screw. The bark screw was unplugged and the testing resumed. Run 2 was paused from 1342-1417 due to lost bark screws, which resulted in bark build-up on the bed of the boiler. The bark screws were unplugged, the bed cleared, and the testing resumed. There were no other operational or sampling complications during the field testing that impacted the data, and the reported test results are believed representative of the emissions encountered during the test periods.

TABLE 2-1
NO. 1 COMBINATION BOILER
(BARK AND TDF)
SUMMARY OF PM, HCl, AND CO EMISSION TESTING

	Run 1	Run 2	Run 3	Mean
Date	2/18/20	2/18/20	2/18/20	----
Time Began	1018	1236	1432	----
Time Ended	1126	1349	1541	----
Stack Gas Data				
Temperature, °F	392	396	392	393
Velocity, ft/sec	51	51	51	51
Moisture, %	22	23	22	22
CO ₂ Concentration, %	11.6	11.9	11.7	11.7
O ₂ Concentration, %	8.9	8.6	8.7	8.7
VFR, x 10 ⁵ dscfm	1.15	1.14	1.15	1.15
Isokinetic Sampling Rate, %	99	102	102	101
F-Factor, dscf/MMBtu	9,659	9,659	9,660	9,659
Particulate Matter				
Concentration, gr/dscf	0.008	0.006	0.006	0.006
Emission Rate, lb/hr	7.63	5.43	5.53	6.20
Emission Factor, lb/MMBtu	0.019	0.013	0.013	0.015
MACT Limit, lb/MMBtu	----	----	----	0.44
Particulate Matter Weighted for Soot Blowing				
Emission Factor, lb/MMBtu	----	----	----	0.015
Hydrogen Chloride				
Concentration, ppm	0.77	0.46	0.40	0.54
Emission Rate, lb/hr	0.50	0.30	0.26	0.35
Emission Factor, lb/MMBtu	0.0012	0.0007	0.0006	0.0009
MACT Limit, lb/MMBtu	----	----	----	0.022
Carbon Monoxide^a				
Concentration, ppm	1,263	1,118	1,258	1,213
Concentration, ppm @ 3% O ₂	1,884	1,627	1,846	1,786
MACT Limit, ppm @ 3% O₂	----	----	----	3,500
Emission Rate, lb/hr	635	554	631	607
Emission Factor, lb/MMBtu	1.541	1.331	1.510	1.460

^aThe CO run times are as follows: 1) 1018-1118, 2) 1236-1339, and 3) 1432-1537.

**TABLE 2-2
No. 1 COMBINATION BOILER
(BARK AND TDF)
SUMMARY OF Hg EMISSION TESTING**

	Run 1	Run 2	Run 3	Mean
Date	2/18/20	2/18/20	2/18/20	----
Time Began	1018	1236	1432	----
Time Ended	1125	1348	1544	----
CO₂ Based F-Factor, dscf/MMBtu	1,909	1,909	1,909	1,909
Mercury (30B Testing)				
Hg, $\mu\text{g}/\text{m}^3$	0.926	0.650	0.694	0.757
Hg, lb/MMBtu	9.50E-07	6.51E-07	7.06E-07	7.69E-07
MACT Limit, lb/MMBtu	----	----	----	5.70E-06

TABLE 2-3
NO. 2 COMBINATION BOILER
(CONDITION 1)
(BARK AND TDF)
SUMMARY OF PM, HCl, AND CO EMISSION TESTING

	Run 1 ^a	Run 2	Run 3	Mean
Date	2/19/20	2/19/20	2/19/20	----
Time Began	0911	1253	1550	----
Time Ended	1029	1439	1656	----
Stack Gas Data				
Temperature, °F	402	408	408	406
Velocity, ft/sec	54	54	54	54
Moisture, %	21	18	16	18
CO ₂ Concentration, %	11.5	9.8	8.7	10.0
O ₂ Concentration, %	9.2	10.7	11.7	10.5
VFR, x 10 ⁵ dscfm	1.21	1.25	1.27	1.24
Isokinetic Sampling Rate, %	100	97	96	98
F-Factor, dscf/MMBtu	9,650	9,649	9,658	9,652
Particulate Matter				
Concentration, gr/dscf	0.148	0.264	0.032	0.148
Emission Rate, lb/hr	153	282	34.5	157
Emission Factor, lb/MMBtu	0.366	0.745	0.100	0.403
MACT Limit, lb/MMBtu	----	----	----	0.44
Particulate Matter Weighted for Soot Blowing				
Emission Factor, lb/MMBtu	----	----	----	0.403
Hydrogen Chloride				
Concentration, ppm	0.33	0.10	0.32	0.25
Emission Rate, lb/hr	0.23	0.07	0.23	0.18
Emission Factor, lb/MMBtu	0.0005	0.0002	0.0007	0.0005
MACT Limit, lb/MMBtu	----	----	----	0.022
Carbon Monoxide^b				
Concentration, ppm	847	629	736	737
Concentration, ppm @ 3% O ₂	1,296	1,104	1,432	1,277
MACT Limit, ppm @ 3% O₂	----	----	----	3,500
Emission Rate, lb/hr	445	342	406	398
Emission Factor, lb/MMBtu	1.059	0.902	1.171	1.044

^aRun 1 was paused from 0938-0952 due to lost bark screw. The bark screw was unplugged and the testing resumed. Run 2 was paused from 1342-1417 due to lost bark screws, which resulted in bark build-up on the bed of the boiler. The bark screws were unplugged, the bed cleared, and the testing resumed.

^bThe CO run times are as follows: 1) 0911-1030, 2) 1253-1430, and 3) 1550-1650.

Note: Based on an EPA approved Alternative Monitoring Plan (AMP) submitted to EPA Region 4 on 21 October 2019, source test Condition 1 (Bark and TDF) for #2 Combination Boiler is no longer required to demonstrate compliance with Boiler MACT source testing. Please see results for test Condition 2 (Bark, TDF, and Oil), and see EPA Region 4 AMP approval letter dated 20 March 2020 in Appendix J.

TABLE 2-4
No. 2 COMBINATION BOILER
CONDITION 1
(BARK AND TDF)
SUMMARY OF Hg EMISSION TESTING

	Run 1 ^a	Run 2	Run 3	Mean
Date	2/19/20	2/19/20	2/19/20	----
Time Began	0911	1253	1550	----
Time Ended	1029	1453	1656	----
CO₂ Based F-Factor, dscf/MMBtu	1,911	1,911	1,910	1,911
Mercury (30B Testing)				
Hg, µg/m ³	0.513	0.357	0.290	0.387
Hg, lb/MMBtu	5.31E-07	4.34E-07	3.97E-07	4.54E-07
MACT Limit, lb/MMBtu	----	----	----	5.70E-06

^aRun 1 was paused from 0938-0952 due to lost bark screw. The bark screw was unplugged and the testing resumed. Run 2 was paused from 1342-1417 due to lost bark screws, which resulted in bark build-up on the bed of the boiler. The bark screws were unplugged, the bed cleared, and the testing resumed.

Note: Based on an EPA approved Alternative Monitoring Plan (AMP) submitted to EPA Region 4 on 21 October 2019, source test Condition 1 (Bark and TDF) for #2 Combination Boiler is no longer required to demonstrate compliance with Boiler MACT source testing. Please see results for test Condition 2 (Bark, TDF, and Oil), and see EPA Region 4 AMP approval letter dated 20 March 2020 in Appendix J.

TABLE 2-5
NO. 2 COMBINATION BOILER
CONDITION 2
(BARK, TDF, AND OIL)
SUMMARY OF PM, HCl, AND CO EMISSION TESTING

	Run 4	Run 5	Run 6	Mean
Date	2/20/20	2/20/20	2/20/20	----
Time Began	1033	1240	1422	----
Time Ended	1141	1347	1530	----
Stack Gas Data				
Temperature, °F	423	427	419	423
Velocity, ft/sec	60	60	60	60
Moisture, %	17	17	17	17
CO ₂ Concentration, %	10.1	10.1	10.3	10.2
O ₂ Concentration, %	9.8	9.8	9.5	9.7
VFR, x 10 ⁵ dscfm	1.39	1.38	1.38	1.39
Isokinetic Sampling Rate, %	98	99	99	99
F-Factor, dscf/MMBtu	9,522	9,500	9,483	9,502
Particulate Matter				
Concentration, gr/dscf	0.100	0.041	0.049	0.063
Emission Rate, lb/hr	120	48.6	57.8	75.3
Emission Factor, lb/MMBtu	0.257	0.105	0.121	0.161
MACT Limit, lb/MMBtu	----	----	----	0.44
Particulate Matter Weighted for Soot Blowing				
Emission Factor, lb/MMBtu	----	----	----	0.159
Hydrogen Chloride				
Concentration, ppm	3.12	3.74	5.07	3.98
Emission Rate, lb/hr	2.47	2.94	3.98	3.13
Emission Factor, lb/MMBtu	0.005	0.006	0.008	0.007
MACT Limit, lb/MMBtu	----	----	----	0.022
Carbon Monoxide^a				
Concentration, ppm	328	307	230	288
Concentration, ppm @ 3% O ₂	529	495	361	462
MACT Limit, ppm @ 3% O₂	----	----	----	3,500
Emission Rate, lb/hr	199	185	139	174
Emission Factor, lb/MMBtu	0.427	0.398	0.290	0.372

^aThe CO run times are as follows: 4) 1033-1137, 5) 1240-1340, and 6) 1422-1522.

Note: Based on an EPA approved Alternative Monitoring Plan (AMP) submitted to EPA Region 4 on 21 October 2019, source test Condition 1 (Bark and TDF) for #2 Combination Boiler is no longer required to demonstrate compliance with Boiler MACT source testing. Source test Condition 2 (Bark, TDF, and Oil) is now the only test condition for CB2 required to demonstrate compliance with Boiler MACT source testing provided the approved AMP is followed. Please see EPA Region 4 AMP approval letter dated 20 March 2020 in Appendix J.

TABLE 2-6
NO. 2 COMBINATION BOILER
CONDITION 2
(BARK, TDF, AND OIL)
SUMMARY OF Hg EMISSION TESTING

	Run 4	Run 5	Run 6	Mean
Date	2/20/20	2/20/20	2/20/20	----
Time Began	1033	1240	1422	----
Time Ended	1141	1347	1530	----
CO₂ Based F-Factor, dscf/MMBtu	1,769	1,745	1,722	1,745
Mercury (30B Testing)				
Hg, µg/m ³	0.121	0.211	0.215	0.182
Hg, lb/MMBtu	1.32E-07	2.27E-07	2.24E-07	1.94E-07
MACT Limit, lb/MMBtu	----	----	----	5.70E-06

Note: Based on an EPA approved Alternative Monitoring Plan (AMP) submitted to EPA Region 4 on 21 October 2019, source test Condition 1 (Bark and TDF) for #2 Combination Boiler is no longer required to demonstrate compliance with Boiler MACT source testing. Source test Condition 2 (Bark, TDF, and Oil) is now the only test condition for CB2 required to demonstrate compliance with Boiler MACT source testing provided the approved AMP is followed. Please see EPA Region 4 AMP approval letter dated 20 March 2020 in Appendix J.



SECTION 3 SOURCE TESTING METHODOLOGY

The emission testing program was conducted in accordance with the U.S. EPA Reference Methods summarized in Table 3-1. Method descriptions and quality assurance data are provided in the referenced appendices.

**TABLE 3-1
SOURCE TESTING METHODOLOGY**

Parameter	Method Number	Appendix Reference		Comments
		Method Description	Quality Control Data	
Volumetric Flow Rate	1, 2, 4	B.1	F	
Gas Composition	3A	B.2	F	
Particulate Matter	5	B.3	F	
Carbon Monoxide	10	B.4	F	
Hydrogen Chloride	26A	B.5	F	Back half of Method 5 Train
Mercury	30B	B.6	F	

These results meet all requirements of TNI unless otherwise specified.

The results within this report relate only to the samples listed in the body of this report.



SECTION 4 QUALITY ASSURANCE/ QUALITY CONTROL

4.1 QUALITY CONTROL PROCEDURES

As part of all testing, WESTON implements a QA/QC program. The field team leader is responsible for implementation of field QA/QC procedures. Individual laboratory managers are responsible for implementation of analytical QA/QC procedures. The overall project manager and the Quality Assurance Manager oversee all QA/QC procedures to ensure that sampling and analyses meet the QA/QC requirements and that accurate data results are generated from the test program.

4.2 GAS STREAM SAMPLING QA/QC PROCEDURES

General checks that are conducted during testing and apply to all methods include the following:

- Performance of leak checks.
- Use of standardized forms, labels and checklists.
- Maintenance of sample traceability.
- Collection of appropriate blanks.
- Use of calibrated instrumentation.
- Review of data sheets in the field to verify completeness.
- Use of validated spreadsheets for calculation of results.

The following section details the specific procedures applied to the isokinetic methods and reference method sampling system.

Stack Gas Velocity/Volumetric Flow Rate QA/QC Procedures

The procedures followed for velocity/volumetric flow rate determinations followed guidelines set forth by EPA Method 2. Incorporated into this method are sample point determinations by EPA Method 1 and gas moisture content determination by EPA Method 4. QA/QC procedures for Methods 1 and 2 are discussed below.

Volumetric flow rates are determined during the isokinetic flue gas tests. The following steps are followed during these tests:

- The S-type pitot tube is visually inspected before sampling.
- Both legs of the pitot tube are leak checked before sampling.
- Proper orientation of the S-type tube is maintained while making measurements. The yaw and pitch axes of the S-type pitot tube are maintained at 90° to the flow.
- The manometer oil is leveled and zeroed before each run.
- Pitot tube coefficients are determined based on physical measurement techniques as delineated in Method 2.

Moisture and Sample Gas Volume QA/QC Procedures

Gas stream moisture is determined as part of the isokinetic test trains. The following procedures are followed in determining the volume of moisture collected:

- Preliminary impinger train tare weights are weighed or measured volumetrically to the nearest 0.1 g or 1.0 ml.
- The balance is leveled and placed in a clean, motionless environment for weighing.
- The indicating silica gel is fresh for each run and periodically inspected and replaced during runs if needed.
- The silica gel impinger gas temperature is maintained below 68 °F.

The procedures that are followed in regards to accurate sample gas volume determination are as follows:

- The dry gas meter is fully calibrated annually using an EPA approved intermediate standard device.
- Pre-test, port-change, and post-test leak-checks are completed and meet the method requirements of less than 0.02 cfm or 4% of the average sample rate.
- The gas meter is read to the thousandth of a cubic foot for all initial and final readings.
- Readings of the dry gas meter, meter orifice pressure (Delta H), and meter temperatures are taken at every sampling point.

- Accurate barometric pressures are recorded at least once per day.
- Pre- and post-test dry gas meter checks are completed verifying the accuracy of the meter calibration constant (Y).

Isokinetic Sampling Train QA/QC Procedures

The procedures outlined in this section are designed to ensure collection of representative, high quality test parameter concentrations and mass emissions data. The sampling procedures followed to ensure representative measurements are as follows:

- All glassware is prepared per reference method procedures.
- The sample rates are within $\pm 10\%$ of the true isokinetic (100%) rate.
- All sampling nozzles are manufactured and calibrated according to EPA standards.
- Particulate filters are pre-test and post-test weighed (following 24-hours of desiccation) to the nearest 0.1 mg to a constant (± 0.5 mg) value.
- Recovery procedures are completed in a clean environment.
- Sample containers for liquids and filters are constructed of borosilicate or polyethylene with Teflon[®]-lined lids.
- At least one reagent blank of each type of solution or filter is retained and analyzed.
- All test train components from the nozzle through the last impinger are constructed of glass or stainless steel (with the exception of the filter support pad which is Teflon[®]).
- All recovery equipment (i.e., brushes, graduated cylinders, etc.) are non-metallic (except for the particulate sample recovery).
- A cyclonic flow check is performed before sampling.

Particulate matter and HCl were measured using isokinetic sampling procedures in EPA Reference Methods 5 and 26A. Table 4-1 through 4-3 summarize the methods' required performance criteria and results achieved during the emission compliance test.

TABLE 4-1
NO. 1 COMBINATION BOILER
SUMMARY OF METHOD 5/26A
PERFORMANCE CRITERIA AND ACHIEVED RESULTS

Method 5/26A Performance Data				
QA Specification	Performance			Acceptance Criteria
	Run 1	Run 2	Run 3	
Sample Collection				
Isokinetic Sampling Rate, %	99	102	102	90-110%
Sampling Time	60	60	60	Minimum 60 minutes
Sample Volume	37.363	37.928	38.233	>35.31 dscf
Pre-test Pitot Leak Check	✓	✓	✓	Stable for 15 seconds at 3" H ₂ O
Post-test Pitot Leak Check	✓	✓	✓	Stable for 15 seconds at 3" H ₂ O
Final Sampling Train Leak Check	0.000	0.005	0.006	<4% of sampling rate or 0.020 cfm in one minute
Initial Meter Box Calibration	1.009			0.97 Y < Y _c < 1.03 Y
Post-test Meter Box Calibration	2.42%			<5%
Pitot Calibration	Included in Appendix F			Confirm geometric specifications
Post-test Pitot Calibration	No damage noted			Inspect for damage
Temperature Sensor Calibrations	✓			±3° C (5.4 °F)

TABLE 4-2
NO. 2 COMBINATION BOILER (CONDITION 1)
SUMMARY OF METHOD 5/26A
PERFORMANCE CRITERIA AND ACHIEVED RESULTS

Method 5/26A Performance Data				
QA Specification	Performance			Acceptance Criteria
	Run 1	Run 2	Run 3	
Sample Collection				
Isokinetic Sampling Rate, %	100	97	96	90-110%
Sampling Time	60	60	60	Minimum 60 minutes
Sample Volume	37.877	38.306	38.402	>35.31 dscf
Pre-test Pitot Leak Check	✓	✓	✓	Stable for 15 seconds at 3" H ₂ O
Post-test Pitot Leak Check	✓	✓	✓	Stable for 15 seconds at 3" H ₂ O
Final Sampling Train Leak Check	0.003	0.002	0.000	<4% of sampling rate or 0.020 cfm in one minute
Initial Meter Box Calibration	1.009			0.97 Y < Y _c < 1.03 Y
Post-test Meter Box Calibration	2.29%			<5%
Pitot Calibration	Included in Appendix F			Confirm geometric specifications
Post-test Pitot Calibration	No damage noted			Inspect for damage
Temperature Sensor Calibrations	✓			±3° C (5.4 °F)

TABLE 4-3
NO. 2 COMBINATION BOILER (CONDITION 2)
SUMMARY OF METHOD 5/26A
PERFORMANCE CRITERIA AND ACHIEVED RESULTS

Method 5/26A Performance Data				
QA Specification	Performance			Acceptance Criteria
	Run 1	Run 2	Run 3	
Sample Collection				
Isokinetic Sampling Rate, %	98	99	99	90-110%
Sampling Time	60	60	60	Minimum 60 minutes
Sample Volume	39.992	40.040	39.982	>35.31 dscf
Pre-test Pitot Leak Check	✓	✓	✓	Stable for 15 seconds at 3" H ₂ O
Post-test Pitot Leak Check	✓	✓	✓	Stable for 15 seconds at 3" H ₂ O
Final Sampling Train Leak Check	0.000	0.004	0.000	<4% of sampling rate or 0.020 cfm in one minute
Initial Meter Box Calibration	1.009			0.97 Y < Y _c < 1.03 Y
Post-test Meter Box Calibration	0.90%			<5%
Pitot Calibration	Included in Appendix F			Confirm geometric specifications
Post-test Pitot Calibration	No damage noted			Inspect for damage
Temperature Sensor Calibrations	✓			±3° C (5.4 °F)

Instrumental Reference Method Sampling Systems

- The sampling system (probe to sample conditioner) is leak-checked prior to the testing.
- All analyzers are calibrated prior to testing to ensure precise and accurate data. Protocol standards are used to calibrate each of the analyzers. Each analyzer is calibrated at three to four points (zero, low, mid, and high range) depending on reference method requirements. Nitrogen or hydrocarbon-free air is used to set the instrument zero. The CO₂ and O₂ calibration standards are 40 to 60 and 100% of span.
- Pre- and post-test calibration bias and calibration drift tests are performed for each test run. The bias check is performed with the calibration standard that is closest to the observed concentration in the sample gas. The average pretest/posttest bias did not exceed 5% of full scale. The calibration drift did not exceed 3%.
- Prior to formal testing, a 12 point stratification check is performed at the test location. Alternatively, per Section 8.1.2 of EPA Method 7E, a three point stratification check passing through the centroidal area of the stack is performed. The three points (16.7, 50, and 83.3% of the stack diameter) are sampled a minimum of two times the system response.

- A response time check is performed before sampling. Sample flow rate must be maintained within 10% of the flow rate at which the system response time was measured.
- A permanent data record of analyzer responses is recorded using computer software designed by WESTON.

4.3 MERCURY QA/QC PROCEDURES

EPA Method 30B is a performance-based method with several requirements governing sampling and analytical operations. This section describes the various method requirements, summarizes the results for the requirements, and where applicable, provides an analysis or discussion of presented results.

Method Detection Limit and Minimum Sample Mass

EPA Method 30B requires determination of the minimum detection limit for each analytical system. WESTON conducted an MDL study for the Ohio Lumex M915+-931 Analytical System and determined that the MDL is 0.6 ng Hg. WESTON assigned a standard low calibration point of 10 ng. Based on the method requirement for a minimum sample mass of two times the low calibration point, WESTON established 40 ng as the standard minimum sample mass with the option to reduce this to 20 ng if required by site conditions.

Hg⁰ and Hg²⁺ Analytical Bias

EPA Method 30B requires an analytical bias test for both the Hg⁰ and Hg²⁺ to establish the upper and lower boundaries for sorbent trap loading. WESTON conducted this test in accordance with Section 8.2.3.1 and determined that sorbent media supplied by Ohio Lumex is suitable for use over the 10 – 200 ng loading range for each Hg⁰ and Hg²⁺.

Analytical System Calibration Requirements

The Ohio Lumex M915+-931 is calibrated daily by transferring sorbent media to quartz ladle, spiking the media with a known mass of mercury, and then placing the ladle in the analyzer to determine instrument response. The instrument response is recorded for each standard and a linear regression analysis is performed to determine acceptability of the calibration curve. An acceptable calibration curve will have a linear regression coefficient (r^2) of ≥ 0.99 and each point on the curve will yield a calculated value that is within $\pm 10\%$ of the known value. Calibration results are summarized in the Quality Control Data Appendix and indicate that method performance criteria for the calibration curves have been satisfied.

Additionally, an independent NIST traceable calibration standard must be analyzed each day following calibration of the instrument and the results must be within $\pm 10\%$ of the known value. Independent standard calibration results are summarized in the Quality Control Data Appendix and indicate that this criterion has been achieved.

Finally, a continuing calibration verification standard must be analyzed following daily calibration and after analyzing ≤ 10 samples. WESTON selects continuing calibration verification standards over the range of the calibration curve based upon observed sample masses. Continuing calibration verification standard results are summarized in the Quality Control Data Appendix and indicate that the required criterion of $\pm 10\%$ was achieved.

Sorbent Trap Breakthrough

EPA Method 30B limits breakthrough – the amount of Hg appearing in the back-section of the sorbent trap – based on concentration of mercury in the source gas. Breakthrough must be $\leq 10\%$ of the front-section mass when the source gas Hg concentration is $> 1 \mu\text{g}/\text{m}^3$ and $\leq 20\%$ of the front-section mass when the source gas Hg concentration is $\leq 1 \mu\text{g}/\text{m}^3$. Breakthrough results are summarized in the Field Data Appendix. Sample breakthrough criteria were satisfied for all samples.

Paired Trap Agreement

EPA Method 30B requires that each sample be collected in duplicate using paired sample trains and that paired sample results satisfy relative deviation (RD) requirements based on the source gas Hg concentration. Relative deviation must be $\leq 10\%$ when the source gas Hg concentration is $> 1 \mu\text{g}/\text{m}^3$ and $\leq 20\%$ or $\leq 0.2 \mu\text{g}/\text{m}^3$ when the source gas Hg concentration is $\leq 1 \mu\text{g}/\text{m}^3$. Paired trap agreement data are also summarized in the Field Data Appendix. Paired trap agreement criteria were achieved for all runs.

Field Recovery Test

EPA Method 30B requires that one field recovery test (Section 8.2.6 defines a field recovery test as three sets of paired sample trains, one train spiked) be performed on each source. A field recovery test is conducted by spiking one of the paired samples with a known quantity of vapor phase mercury and then collecting the samples using the paired train. The paired train data are then used to calculate source mercury concentration, paired train agreement, breakthrough, and field (or spike recovery).

Section 8.2.6.1 outlines a spiking requirement of 50-150% of expected sample mass. Our conversations with Mr. Jeff Ryan of EPA indicated that the 50-150% is offered as guidance and for that reason, specifically excluded from the quality control requirements specified in Table 9-1 of the method. WESTON procured tubes pre-spiked with 50 ng of mercury based on expected mercury concentrations. The results of the field recovery test are summarized in Table 4-4.

**TABLE 4-4
SUMMARY OF FIELD SPIKE RECOVERY TEST RESULTS**

Source/Date	Average Spike Recovery (%)	Required Spike Recovery (%)
No. 1 Combination Boiler	99.9	85-115
No. 2 Combination Boiler (Condition 1)	98.3	85-115
No. 2 Combination Boiler (Condition 2)	100.7	85-115

Section 8.2.6.2 established that the field recovery test is acceptable when the average recovery is between 85 and 115%. Additionally, Section 8.3.3.3 establishes a requirement for the average volume sampled during each run to be within 20% of the average sample volume for the field recovery test. Field recovery results are summarized in the Field Data Appendix. Field spike recoveries yielded acceptable averages of 99.9%, 98.3%, and 100.7% for CB1, CB2 – Condition 1, and CB2 – Condition 2, respectively. The sample volume for the field recovery tests for the No. 1 Combination Boiler ranged from 58.750 L to 59.808 L with an average of 59.256 L. The No. 2 Combination Boiler, Condition 1 volumes ranged from 59.028 L to 61.306 L with an average of 60.104 L. The No. 2 Combination Boiler, Condition 2 volumes ranged from 60.246 L to 61.346 L with an average of 60.894 L. These data indicate that the percentage recovery and sample volume requirements of the method were satisfied.

Leak Checks

Pre- and post-test leak checks were performed for each run. All leak checks passed as indicated on field data sheets provided in Appendices C and D.

Sample Equipment Calibration

Sampling equipment calibration data are provided in Appendix F.

4.4 STACK SAMPLE ANALYTICAL QA/QC PROCEDURES

Calibration Standards and Reagents

All calibration standards and reagents are prepared from ACS grade or better chemicals.

Blanks

A lab blank may be analyzed for each analyte type to document the purity of materials used in the analytical process. Additionally, reagent blanks of all solvents, solutions, filters, and resins used in sampling and sample recovery, respectively, are analyzed for the respective analytes.

Duplicates

Ten percent of the analytes (except particulate) are analyzed in duplicate. The duplicate analyses must agree within the method specified limits of relative percent difference (% RPD) or the sample may need to be reanalyzed. The formula to be applied to determine % RPD is:

$$\% RPD = \frac{C_1 - C_2}{(C_1 + C_2)/2} \times 100$$

Where:

- PD = Relative percent difference
- C₁ = Concentration of analyte in sample
- 2 = Concentration of analyte in replicate

Instrument Performance

A performance check is made periodically on each analytical instrument. Instrument response must be within method specified limits of the most recent calibration value for comparable measurements or corrective action will be taken (i.e., reprep and reanalyze standards or service instrument) before any samples are analyzed. Additionally, a correlation coefficient of >0.995 must be obtained during any multipoint instrument calibration (linearity check) before proceeding with sample analyses.

Instrument Maintenance

Instruments are maintained in accordance with manufacturers' specifications. More frequent maintenance may be dictated dependent on operational performance. Instrument logs are maintained to document the data and type of maintenance performed.

Instrument Calibration

Before any instrument can be used as a measurement device, the instrumental response to known reference materials must be determined. The manner in which the various instruments are calibrated is dependent on the particular instrument and the intended use of the instrument. All sample measurements are made within the calibrated range of the instrument.

4.5 QA/QC CHECKS FOR DATA REDUCTION AND VALIDATION

All data and/or calculations for flow rates, moisture contents, and isokinetic rates, which are made using a computer software program, are validated by an independent check. In addition, all calculations are spot checked for accuracy and completeness by the Field Team Manager.

In general, all measurement data are validated based on the following criteria:

- Process conditions during sampling or testing.
- Acceptable sample collection procedures.
- Consistency with expected or other results.
- Adherence to prescribed QC procedures.

Any suspect data are flagged and identified with respect to the nature of the problem and potential effect on the data quality.

Upon completion of testing, the Field Team Manager is responsible for preparation of a complete data summary including calculation results, raw data sheets, and laboratory reports.

4.6 SAMPLE IDENTIFICATION AND CUSTODY

Sample custody procedures are based on EPA recommended procedures. Since samples are analyzed at remote laboratories, the custody procedures emphasize careful documentation of sample collection and field analytical data and the use of chain-of-custody records for samples being transferred. These procedures are discussed below.

The Field Team Leader is responsible for ensuring that all stack samples taken are accounted for and that all proper custody and documentation procedures are followed for the field sampling and field analytical efforts. The Field Team Leader is assisted in this effort by key sampling personnel involved in sample recovery.



Following sample collection, all stack samples are given a unique sample identification code. Stack sample labels are completed and affixed to the sample container. The sample volumes are determined and recorded and the liquid levels on each bottle are marked. Sample bottle lids are sealed on the outside with Teflon® tape to prevent leakage. Additionally, the samples are stored in a secure area until they are shipped.

The samples are packed for travel, and the chain-of-custody forms are completed for each shipment. The chain-of-custody forms specifying the treatment of each sample are also enclosed in the sample shipment container.



APPENDIX A SAMPLE CALCULATIONS

SAMPLE CALCULATIONS

Meter Pressure (Pm), in. Hg

$$P_m = P_b + \frac{\Delta H}{13.6 \text{ in. H}_2\text{O/in. Hg}}$$

where, P_b = barometric pressure, in. Hg
 ΔH = Pressure differential of orifice in. H₂O

Absolute Stack Gas Pressure (Ps), in. Hg

$$P_s = P_b + \frac{P_g}{13.6 \text{ in. H}_2\text{O/in. Hg}}$$

where, P_b = barometric pressure, in. Hg
 P_g = Static Pressure, in. H₂O

Standard Meter Volume (Vmstd), dscf

$$V_{mstd} = \frac{17.64^\circ\text{R/in. Hg} \times Y \times V_m \times P_m}{T_m}$$

where, Y = meter correction factor
 V_m = meter volume, cf
 P_m = meter pressure, in. Hg
 T_m = meter temperature, °R

Standard Wet Volume (Vwstd), scf

$$V_{wstd} = 0.04707 \text{ ft}^3/\text{mL} \times V_{lc}$$

where, V_{lc} = volume of H₂O collected, mL

Moisture Fraction (Measured), (Bws)

$$B_{ws} = \frac{V_{wstd}}{(V_{wstd} + V_{mstd})}$$

where, V_{wstd} = standard wet volume, scf
 V_{mstd} = standard meter volume, dscf

Moisture, % (M%)

$$M\% = Bws \times 100$$

where, Bws = moisture fraction, measured or at saturation,
whichever is lowest

Molecular Weight (DRY) (Md), lb/lb-mole

$$Md = (0.44 \times \% CO_2) + (0.32 \times \% O_2) + (0.28 (100 - \% CO_2 - \% O_2))$$

Molecular Weight (WET) (Ms), lb/lb-mole

$$Ms = Md (1 - Bws) + 18 (Bws)$$

where, Md = molecular weight (DRY), lb/lb-mole
Bws = moisture fraction, dimensionless

Average Velocity (Vs), ft/sec

$$Vs = 85.49 \frac{ft}{sec} \sqrt{\frac{(lb/lb - mole) (in. Hg)}{(^{\circ}R)(in. H_2O)}} \times Cp \times \sqrt{\Delta P_{avg.}} \times \sqrt{\frac{Ts}{Ps \times Ms}}$$

where, Cp = pitot tube coefficient
Delta P = velocity head of stack gas, in. H₂O
Ts = absolute stack temperature, °R
Ps = absolute stack gas pressure, in. Hg
Ms = molecular weight of stack gas, lb/lb-mole

Average Stack Gas Flow at Stack Conditions (Qa), acfm

$$Qa = 60 \text{ sec/min} \times Vs \times As$$

where, Vs = stack gas velocity, ft/sec
As = cross-sectional area of stack, ft²

Average Stack Gas Flow at Standard Conditions (Qs), dscfm

$$Qs = 17.64 \frac{^{\circ}R}{in. Hg} \times Qa \times (1 - Bws) \times \frac{Ps}{Ts}$$

where, Qa = average stack gas flow at stack conditions, ft³/min
Bws = moisture content (dimensionless)
Ps = absolute stack gas pressure, in. Hg
Ts = absolute stack temperature, °R

Particulate Matter Concentration at Standard Conditions (Cs), gr/dscf

$$C_s = 15.43 \frac{gr}{g} \times \frac{Mn}{Vmstd}$$

where, Mn = particulate matter collected, g
Vmstd = std. meter volume, dscf

Particulate Matter Emission Rate (PMR), lb/hr

$$PMR = \frac{C_s \times Q_s \times 60 \frac{min}{hr}}{7000 \frac{gr}{lb}}$$

where, Cs = particulate conc. at std. cond., gr/dscf
Qs = avg. stack gas flow at std. cond., dscf/min

PM Emission Factor (EMF), lb/MMBtu (correcting for O₂)

$$EMF = PM \text{ conc.} \frac{gr}{dscf} \times \frac{lb}{7000 \text{ gr}} \times F \text{ factor} \frac{dscf}{MMBtu} \times \frac{20.9}{20.9 - \% O_2}$$

where, PM conc. = Cs
F factor = defined by client or CFR, scf/MMBtu

Particulate Emission Factor Adjusted for Soot Blowing (PMFavg), lb/MMBtu

$$PMF_{avg} = PMF_{sbr} \frac{(A+B)S}{AR} + PMF_{nosb} \left[\frac{R-S}{R} - \frac{BS}{AR} \right]$$

where, PMF = particulate emission factor, lb/MMBtu
PMFavg = average PMF for daily operating time, lb/MMBtu
PMFsbr = average PMF of sample(s) containing soot blowing, lb/MMBtu
PMFnosb = average PMF of sample(s) with no soot blowing, lb/MMBtu
A = hours of soot blowing during samples, hr
B = hours of no soot blowing during samples, hr (containing soot blowing)
R = average hours of operation per 24 hours, hr (not soot blowing)
S = average hours of soot blowing per 24 hours, hr

HCl Concentration (conc.), ppm (μL/L)

$$conc. = \frac{mass \mu g \times 24.04 \frac{\mu L}{\mu g - mole}}{mol.wt. \frac{\mu L}{\mu g - mole} \times sample \text{ vol. (L)}}$$

HCl Emission Rate (EMR), lb/hr

$$EMR = \frac{conc. \times MW \times Qs \times 60 \frac{min}{hr} \times 28.32 \frac{L}{dscf}}{24.04 \frac{L}{g-mole} \times 1.0 \times 10^6 \frac{\mu L}{L} \times 454 \frac{g}{lb}}$$

where, conc. = HCl conc., ppm ($\mu\text{L/L}$)
 MW = molecular weight of HCl, 36.46 g/g-mole
 Qs = stack gas flow at std. cond., dscfm

HCl Emission Factor (EMF), lb/MMBtu (correcting for O₂)

$$EMF = HCl\ conc.\ dry \times 2.59\ E-9 \frac{lb/scf}{ppm} \times MW \times F-Factor, \frac{dscf}{MMBtu} \times \frac{20.9}{20.9-\%O_2}$$

where, HCl conc. dry = measured HCl conc. wet ppm
 F-Factor = defined by client or CFR, scf/MMBtu
 2.59 E-09 = constant
 MW = molecular weight of HCl, 36.46 g/g-mole

CO Concentration Corrected for O₂, CO ppm @ 3% O₂

$$CO\ ppm \times \frac{20.9 - 3\% O_2}{20.9 - measured\ \% O_2}$$

CO Emission Rate EMR, lb/hr

$$EMR = \frac{Conc. \times MW \times Qs \times 60 \frac{min}{hr} \times 28.32 \frac{L}{dscf}}{24.04 \frac{L}{g-mole} \times 1.0 \times 10^6 \frac{\mu L}{L} \times 454 \frac{g}{lb}}$$

where, Conc. = CO conc., ppm ($\mu\text{L/L}$)
 MW = molecular weight of CO, 28.0 g/g-mole
 Qs = stack gas flow at std. cond. dscfm

CO Emission Rate (EMR), lb/MMBtu (correcting for O₂)

$$EMR = CO\ conc.\ dry \times 2.59\ E-9 \frac{lb/scf}{ppm} \times MW \times F-Factor, \frac{dscf}{MMBtu} \times \frac{20.9}{20.9-\%O_2}$$

where, CO conc. Dry = measured CO conc., dry ppm
 2.59 E-9 lb/scf/ppm = constant
 F-factor = defined by client or CFR, scf/MMBtu
 MW = molecular weight of CO (28.00 lb/lb-mole)

Mercury Concentration ($\mu\text{g}/\text{m}^3$)

$$\text{Conc.} = \text{ng} \div \text{vol. L} = \mu\text{g}/\text{m}^3$$

Mercury Emission Factor, EMF (lb/TBtu)

$$\text{EMF} = \left(\frac{\text{Conc.} \times F\text{-factor} \times 28.32 \times \left(\frac{100}{\% \text{CO}_2} \right)}{1.0 \times 10^9 \times 454} \right) \times 1.0 \text{ E}^6$$



APPENDIX B TEST METHODOLOGY

- B.1 VOLUMETRIC FLOW RATE**
- B.2 GAS COMPOSITION**
- B.3 PARTICULATE MATTER**
- B.4 CARBON MONOXIDE**
- B.5 HYDROGEN CHLORIDE**
- B.6 MERCURY**

B.1 VOLUMETRIC FLOW RATE

Mass emission rates are calculated by multiplying measured target analyte concentrations by calculated volumetric flow rates. Volumetric flow rates are determined using measurement data obtained by EPA Reference Methods 1-4.

The ductwork is measured at the sample location to the nearest 0.25 inch using a steel tape measure. Traverse points are selected in accordance with EPA Reference Method 1 on the basis of ductwork dimensions, geometry, and upstream and downstream disturbances. When a sample location does not meet EPA Reference Method 1 criteria, the maximum recommended number of traverse points is used.

Gas Velocity

The velocity of the gas stream is measured in accordance with EPA Reference Method 2 by reading the instantaneous velocity pressure with an inclined manometer at each traverse point using either an “S” type pitot tube and a leveled, inclined manometer with a scale of 0 to 10 inches of water. In rare cases of highly negative pressure sources, a Magnahelic gauge with scales of 0 to 5 or 0 to 25 inches of water may be used in place of an inclined manometer. The stack pressure is calculated from the measured static pressure of the stack and the ambient barometric pressure. The static pressure is calculated from using the static side of the pitot tube, and the barometric pressure is measured using a calibrated aneroid barometer. Manometer selection is determined by the velocity pressure of the gas stream. A manometer with a 0 to 0.25 inch scale may be used when the velocity pressure of the gas stream is less than 0.25 inches of water. By convention, any measured velocity pressures of less than 0.005 inches of water are recorded and reported as less than 0.005 inches of water. The stack temperature is measured with a calibrated thermocouple and pyrometer.

For low velocity pressure measurements (less than 0.005 inches of water) a hot wire anemometer may be used to measure the velocity of the gas stream. The indicated velocity is used without correction when the gas stream is ambient air with a moisture content of less than 65%. The indicated velocity is corrected in accordance with procedures specified by the manufacturer when the moisture content exceeds 65% or when the dry gas fraction is something other than ambient air.

Gas Composition and Moisture Content

The oxygen and carbon dioxide concentration in the gas stream is measured instrumentally in accordance with EPA Reference Method 3A as described in Section B.2 or EPA Reference Method 20 as described in Section B.3.

The moisture content of the gas stream is determined according to EPA Reference Method 4, by collecting an integrated sample of source gas from a single point on the gas stream. At the conclusion

of each run the volume of condensed moisture collected in the impingers of the sampling train is measured and used to evaluate the moisture content of the gas stream.

When sources are saturated or contain entrained water droplets, moisture content is also determined using the temperature measured at each traverse point and psychometric chart values corrected for stack pressure or by use of saturation vapor pressure tables. In these conditions, the lower moisture of the measured and saturation based values is used for volumetric flow rate calculations.

The molecular weight of the gas stream is calculated using the determined moisture, oxygen, and carbon dioxide concentrations. The balance of the gas stream is assumed to be nitrogen. The volumetric flow is then calculated at stack and standard conditions using the calculated molecular weight, the measured stack temperature, and measured velocity, stack and barometric pressures. Standard conditions are 68 °F and 29.92 inches of mercury and 0% moisture.

Data Acquisition and Reporting

Data are recorded at the time of collection on preprinted data sheets. Calculations are performed (where possible) with preprogrammed calculators or spreadsheet software.

Quality Control

Quality control procedures for volumetric flow measurements involve leak checks of pitot tubes, pitot tube lines and manometers; periodic analysis of ambient air and duplicate analysis of source gas samples with the Fyrite analyzer; triplicate analysis with the Orsat analyzer; and periodic calibration checks of thermocouples and pyrometers. Magnahelics are verified against inclined manometers prior to each use.

Data transfers are minimized. Data sheets are checked for completeness and accuracy. Calculations are verified by a second person.

B.2 GAS COMPOSITION (INSTRUMENTAL)

Oxygen (O₂) and carbon dioxide (CO₂) testing is conducted in accordance with EPA Reference Method 3A.

Sampling Equipment and Procedures

Figure B-1 illustrates the sampling system. The sample is withdrawn continuously from the source through a heated probe, filter, and sample line to a sample conditioner which removes moisture from the gas stream. The sample is then transported to a Paramagnetic O₂ analyzer and an Infrared CO₂ analyzer.

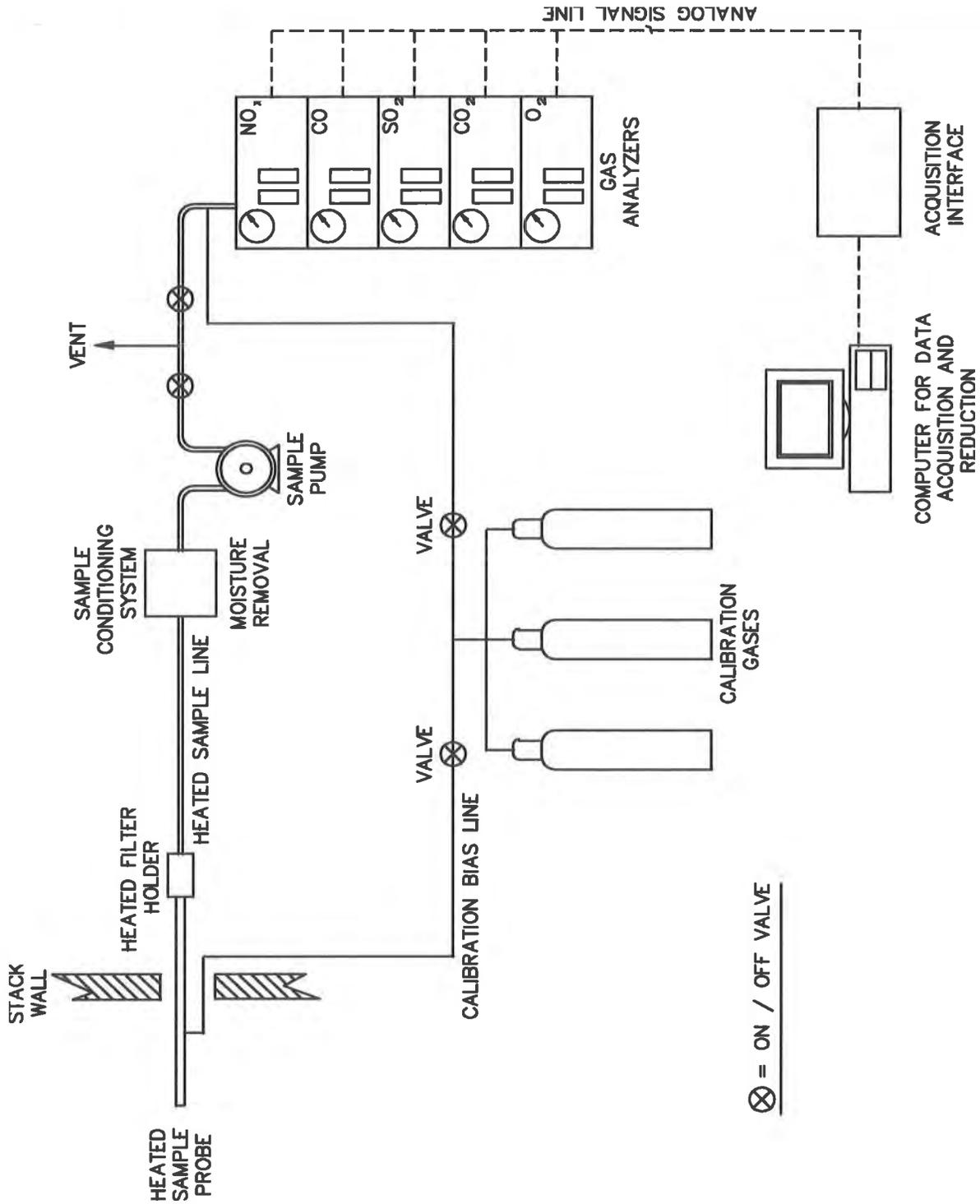


Figure B-1 Continuous Emission Monitoring System

Sample Analysis

The O₂ analyzer uses a paramagnetic detector and the CO₂ analyzer uses a non-dispersive infra-red (NDIR) detector to produce an electrical signal which is linearly proportional to the O₂ and CO₂ concentration, respectively.

Data Acquisition and Reduction

Data are acquired electronically using a computer with software designed by WESTON for EPA Reference Method 3A analysis. This system generates a calibration curve, converts electronic signals into concentrations, and provides one-minute averages during the sample run and an average concentration over the duration of the sample run.

Quality Control

At the time of analysis, O₂ and CO₂ in nitrogen calibration gases certified according to EPA Protocol-1, are used to calibrate the analyzer and to determine a bias correction factor for the entire system bias in accordance with EPA Reference Method 3A. The calibration gases are introduced directly to the analyzer to generate the calibration curve. A zero gas and an upscale calibration gas is introduced at the probe and recovered through the sampling and analytical system. A bias correction factor is calculated using the ratio of the concentration measured from the sampling system and concentration measured directly at the analyzer. Sample run averages are corrected for system bias results.

B.3 PARTICULATE MATTER

Particulate matter (PM) emission testing is conducted using EPA Reference Method 5. EPA Reference Methods 1-4 are used, as appropriate, for traverse point selection, determination of stack gas molecular weight, stack gas moisture determination, and volumetric flow rate.

Sampling Equipment and Procedures

The sampling train utilized to perform the PM sampling is an EPA Reference Method 5 train (see Figure B-2). A measured borosilicate, quartz glass, or stainless steel (316) nozzle is attached to a heated (248 ± 25 °F) borosilicate or quartz glass, or stainless steel probe of appropriate length. The probe is connected to a heated (248 ± 25 °F) borosilicate glass filter holder containing a 9-cm glass fiber filter (preweighed to a constant 0.1 mg weight). The first and second impingers each contain 100 mL of distilled water, the third impinger is empty, and the fourth impinger contains 200 to 300 grams of dry preweighed silica gel. The second impinger is a standard Greenburg-Smith type. The first, third, and fourth impingers are of a modified design. All impingers are maintained in a crushed ice bath. A gas measuring control console with a leak-free vacuum pump, a calibrated dry gas meter, a

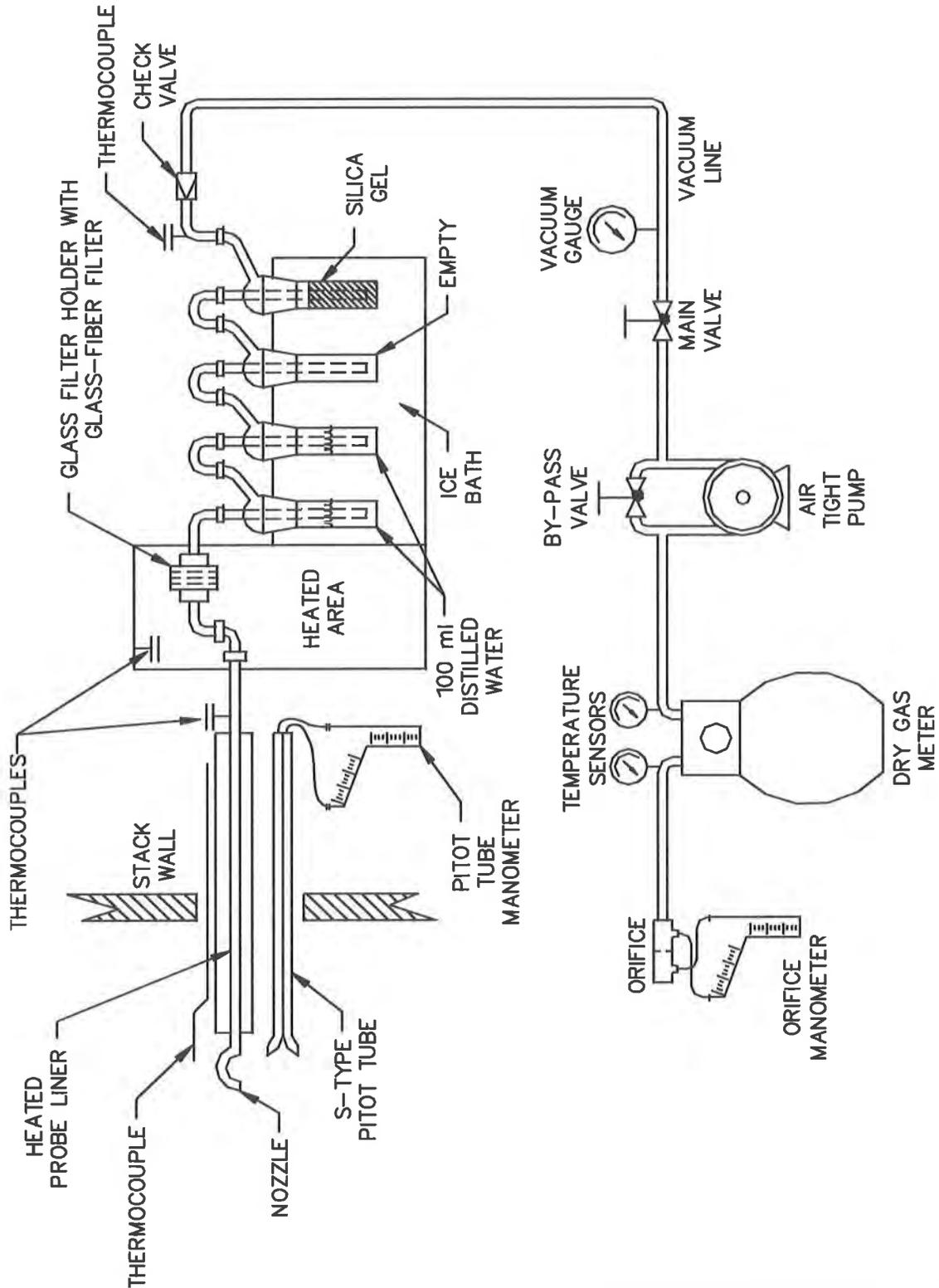


Figure B-2 EPA Reference Method 5 Sampling Train

calibrated orifice, and inclined manometers are connected to the final impinger, probe, heated filter holder, and pitot tube via an umbilical cord to complete the train.

Flue gas velocity is measured with a calibrated S-type pitot tube (provided with extensions) fastened alongside the sampling nozzle. Flue gas temperature is monitored with a calibrated direct readout pyrometer equipped with a chromel-alumel (Type K) thermocouple positioned near the sampling nozzle. The probe, filter box, and impinger exit gas temperatures are monitored with a calibrated direct readout pyrometer equipped with Type K thermocouples positioned in the probe, heated filter chamber, and in the sample gas stream after the last impinger. Stack gas stream composition (carbon dioxide and oxygen content) is determined as previously described. The sampling rate is adjusted, based on stack velocity, at each point to ensure the sample is collected isokinetically.

At the conclusion of each test, the sampling train is leak checked. Upon completion of a successful leak check, the sampling train is dismantled, openings are sealed, and the components recovered as described below.

- The glass fiber filter(s) is/are removed from its holder with tweezers and placed in its original container, along with any particulate and filter fragments (Sample Fraction 1).
- The probe and nozzle are separated and the particulate rinsed with distilled water or acetone into a polyethylene container while brushing a minimum of three times. Particulate adhering to the brush is rinsed with the appropriate solvent into the same container. The front half of the filter holder and connecting glassware are also rinsed. These rinses are combined (Sample Fraction 2).
- The total liquid content of impingers one, two, and three are measured volumetrically for stack gas moisture content calculation. This liquid is discarded.
- The silica gel is removed from the last impinger and immediately weighed to the nearest 0.1 g for stack gas moisture content calculation.
- Aliquots of the appropriate solvents and a filter are retained for blank analyses.

Each sample bottle is labeled to clearly identify its contents. The liquid level is marked on each bottle. The samples are then secured for transport to a laboratory for analysis. Sample integrity is assured by maintaining chain-of-custody records.

Sample Analysis

The particulate analysis proceeds as follows:

- The sample filters (Sample Fraction 1) and blank filter are desiccated for 24 hours and weighed to the nearest 0.1 mg to constant (± 0.5 mg) weight.
- The nozzle, probe, and front half of the filter holder wash samples (Sample Fraction 2), along with the solvent blank, are evaporated in tared beakers, then desiccated and weighed to the nearest 0.1 mg to constant (± 0.5 mg) weights.

The total weight of material measured in the front half wash in addition to the weight of material collected on the glass fiber filter represent the total PM catch for each train. Blank corrections are made where appropriate for all sample weights.

Data Acquisition and Reduction

Data are recorded at the time of collection on preprinted data sheets. Calculations are performed with preprogrammed calculators or spreadsheet software. Data transfers are minimized. Field and laboratory data sheets are checked for completeness and accuracy. Calculations are verified by a second person.

Quality Control

Dry gas meters are calibrated before sampling and checked after sampling. Thermocouples are calibrated against National Institute of Standards and Technology (NIST) thermocouples, and aneroid barometers are calibrated against a NIST barometer. WESTON participated satisfactorily in the most recent dry gas meter audit supplied by the EPA. Those data are on file at WESTON.

Prior to and following each run, the sampling train is leak checked. An acceptable leak rate does not exceed the lesser of 0.02 actual cubic feet per minute (acfm) or 4% of the actual sampling rate. The isokinetic sampling rate is calculated at the completion of each sample run. If the isokinetic sampling rate is not within $100\% \pm 10\%$, the sample run is repeated.

Samples are transported to the laboratory under chain-of-custody. Solvent blanks and filter blanks are analyzed at the same time as the samples. The mass collected on the filters and the mass in the probe wash are corrected by the blank measurements.

WESTON uses Class S weights during each stage of the analysis to verify the accuracy of the balance. The balance is repaired and recalibrated before proceeding if there is a significant difference in the actual mass and measured mass.

B.4 CARBON MONOXIDE

Carbon monoxide testing is conducted in accordance with EPA Reference Method 10.

Sampling Equipment and Procedures

Figure B-1 illustrates the sampling system. Sampling is performed by extraction of an integrated stack gas sample collected in a Tedlar® bag, or by continuous sample extraction and analysis. For both sampling procedures the sample is withdrawn from the stack, through a conditioning system for moisture removal, using a leak-tight sample pump. The dry gas sample is then collected at the outlet of the sample pump using a Tedlar® bag or transported through sample lines to the analyzer for continuous on-line monitoring.

Sample Analysis

The CO Non-Dispersive Infrared (NDIR) analyzer uses gas filter correlation spectroscopy to measure the amount of CO present in the sample. Infrared radiation is chopped and passed through an alternating CO and N₂ correlation filter wheel and the sample stream. Carbon monoxide in the sample absorbs the infrared radiation, leaving the remaining radiation to be measured by a detector producing a linear output signal.

Data Acquisition and Reduction

Data are acquired electronically using a computer with software designed by WESTON for EPA Reference Method 10 analysis.

For data collection using a computer and acquisition interface, the software generates a calibration curve, converts electronic signals into concentrations, and provides bias-corrected run averages. All subsequent calculation procedures required for compliance with EPA Reference Method 10 are performed electronically.

Quality Control

At the time of analysis, EPA Protocol-1 CO in nitrogen calibration gases are used to calibrate the analyzer. Calibration is performed in accordance with EPA Reference Method 10.

A CO₂ interference response study was performed by the manufacturer of the analyzer. The data from this study are on file at WESTON.

B.5 HYDROGEN CHLORIDE

Hydrogen chloride (HCl) is determined following procedures outlined in EPA Reference Method 26A.

Sampling Equipment and Procedures

Figure B-3 presents a schematic of the sampling train. The nozzle and heated probe is constructed of borosilicate glass and connected to a heated filter holder containing a Teflon® coated quartz filter. The probe and filter components are strictly maintained between 248 to 273 °F during sampling. When source temperature exceeds 410 °F, an all quartz fiber filter is used. The filter assembly is connected to an impinger train. The first and second impingers are each charged with 100 of 0.1 N H₂SO₄. The third impinger is empty and the fourth contains 100 mL of 0.1 N NaOH when hydrogen fluoride (HF) is targeted in addition to HCl. The last impinger is charged with 200-300 grams of indicating silica gel. All impingers are maintained in a crushed ice bath. A gas measuring control console with a leakless vacuum pump, a calibrated dry gas meter, a calibrated orifice, and inclined manometers are connected to the final impinger via an umbilical cord to complete the train. In the event high moisture conditions are expected, a knockout impinger charged with 50 mL of 0.1 N H₂SO₄ may be used prior to the impingers charged with 100 mL of 0.1 N H₂SO₄.

Flue gas velocity is measured with a calibrated S-type pitot tube (provided with extensions) fastened alongside the sampling nozzle. Flue gas temperature is monitored with a calibrated direct readout pyrometer equipped with a chromel-alumel (Type K) thermocouple positioned near the sampling nozzle. The impinger exit gas temperature is monitored with a calibrated direct readout pyrometer equipped with Type K thermocouples positioned in the sample gas stream after the last impinger. Stack gas stream composition (carbon dioxide and oxygen content) is determined as described previously. The sampling rate is adjusted, based on stack velocity, at each point to ensure the sample is collected isokinetically.

After completion of the sample run, the sample train is leak checked. Following a successful leak check, the contents of the first and second impingers are measured and transferred to a borosilicate glass sample container with a Teflon® lined lid. The impingers are then rinsed with deionized water into the same sample container.

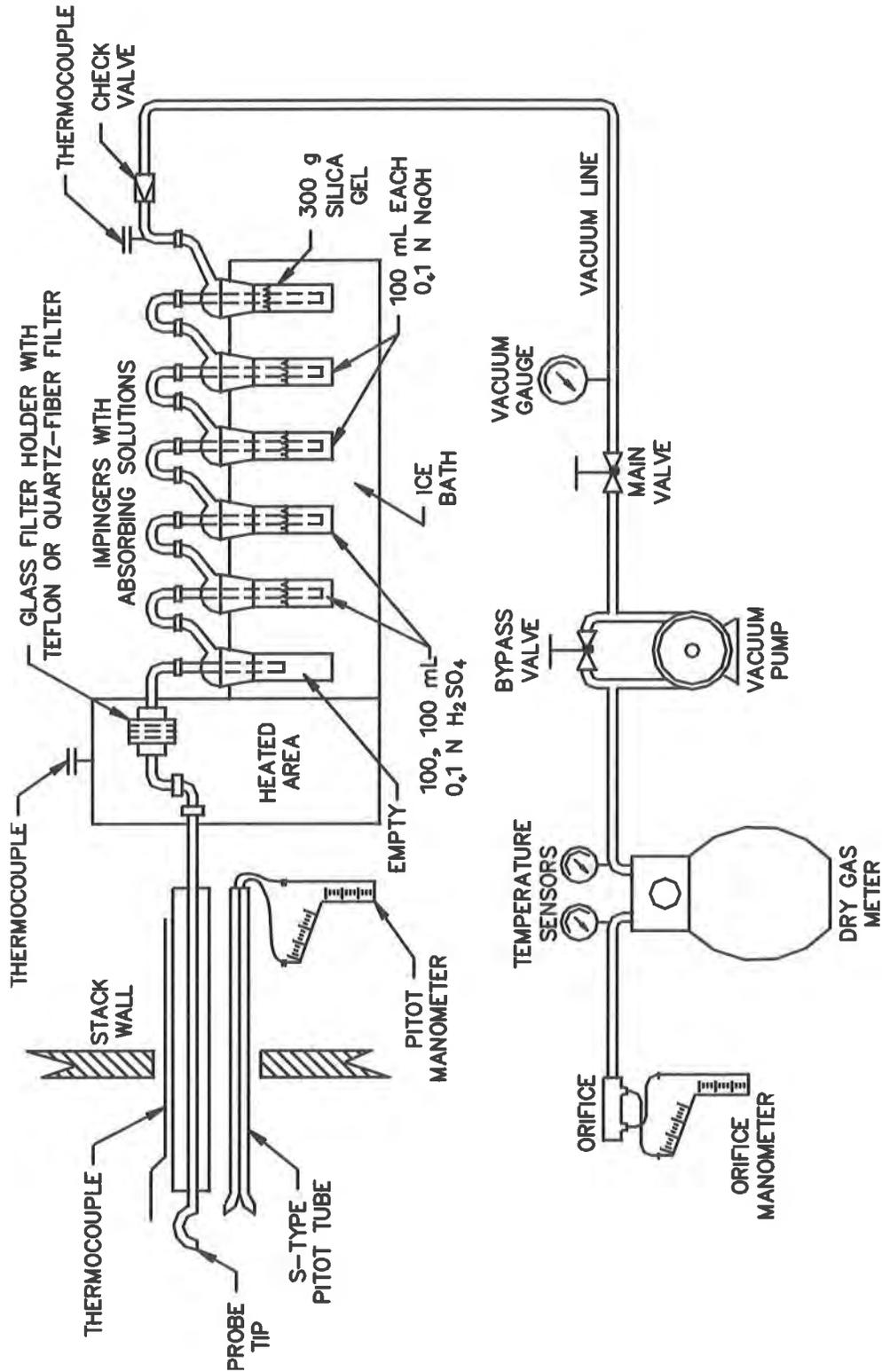


Figure B-3 EPA Reference Method 26A Hydrogen Chloride Sampling Train

Sample Analysis

The samples are analyzed for chloride using ion chromatography (IC) as described in the Method 26A. All IC is performed using acceptable laboratory procedures. Adherence to prescribed quality control procedures as described below ensures data of consistent and measurable quality. Analytical quality control focuses on instrument calibration as per EPA Reference Method 26A and the use of control standards to provide a measure of analytical precision and accuracy. Specific acceptance criteria is defined for analytical operations including calibrations and control standard analyses.

Analytical quality control includes analysis of a laboratory blank, method spikes, and duplicates. The laboratory blank consists of the DI H₂O used for any sample dilutions analyzed per the procedures specified in draft Method 26A to check for laboratory contamination. Method spikes for EPA Reference Method 26A are prepared by spiking a representative amount of HCl into 0.1 N H₂SO₄ and adjusting the volume to 100 mL using DI H₂O. The method spikes are handled in the same manner as (and analyzed with) the field samples.

In compliance with EPA's stationary source audit sample program, HCl and/or HF audit samples are requested with any compliance or official method 26A test event.

Data Acquisition and Reduction

Data are recorded at the time of collection on preprinted data sheets. Calculations are performed (where possible) with preprogrammed calculators or spreadsheet software.

Quality Control

Calibration and leak checking of the appropriate sampling equipment, including meter boxes, temperature sensors, nozzles, pitot tubes, and umbilicals, are performed according to the requirements specified in EPA's "Quality Assurance Handbook, Volume III" (600/4-77-027b). The results are documented and retained.

Dry gas meters are calibrated before and after sampling. Thermocouples are calibrated against mercury thermometers, and aneroid barometers are calibrated against a mercury barometer. The temperature of the gas leaving the impinger train is kept at 68 °F or less throughout the sampling by maintaining the ice bath. Care is taken to prevent sample loss during sample recovery. Sample storage bottles are purchased new or cleaned prior to use and are kept sealed at all times. Samples are transported to the laboratory under chain-of-custody. Upon receipt by the laboratory, the liquid level in each sample bottle is noted. If a noticeable amount of liquid has been lost, the sample is voided. Reagents used during testing meet American Chemical Society specifications. A blank is analyzed with each series of samples.

Data transfers are minimized. Field and laboratory data sheets are checked for completeness and accuracy. Calculations are verified by a second person.

B.6 MERCURY

The carbon sorbent media approach described in EPA Reference Method 30B was used to determine the total mercury vapor phase concentration in the stack. This method has extensive QA/QC procedures associated with the sampling and analytical procedures which are summarized in Section 5.0. Sample analysis was performed on-site using the Ohio-Lumex thermal desorption/atomic absorption integrated RA 915+ analyzer.

The sampling train is assembled as illustrated in Figure B-4. Gas is extracted from the source at a targeted, constant rate and passed through a two-section sorbent trap that is positioned at the probe tip. Source gas exits the sorbent trap and is conveyed via a heated line to an ice water-cooled condenser to condense the water vapor in the extracted gas stream. The dry gas exiting the condenser is measured using a calibrated meter and mathematically adjusted to volume at standard conditions. The train is operated in duplicate for each run. A minimum of three field recovery tests (spike train) are run during each RATA.

The sorbent tubes are recovered at the end of the sampling interval, capped, and transferred to the onsite laboratory for analysis. In the laboratory, the sorbent tube is recovered such that the front and back sections of each tube can be analyzed separately. The individual sorbent trap sections are analyzed onsite in accordance with EPA Method 7473 using an Ohio Lumex RA 915+ Analyzer which incorporates both thermal decomposition and Zeeman atomic spectrometer modules. The analyzer response is calibrated using sorbent media which has been spiked with a known quantity of mercury.

The analyzer output corresponds to mercury mass, which is divided by sample volume to yield mercury concentration in $\mu\text{g}/\text{m}^3$.

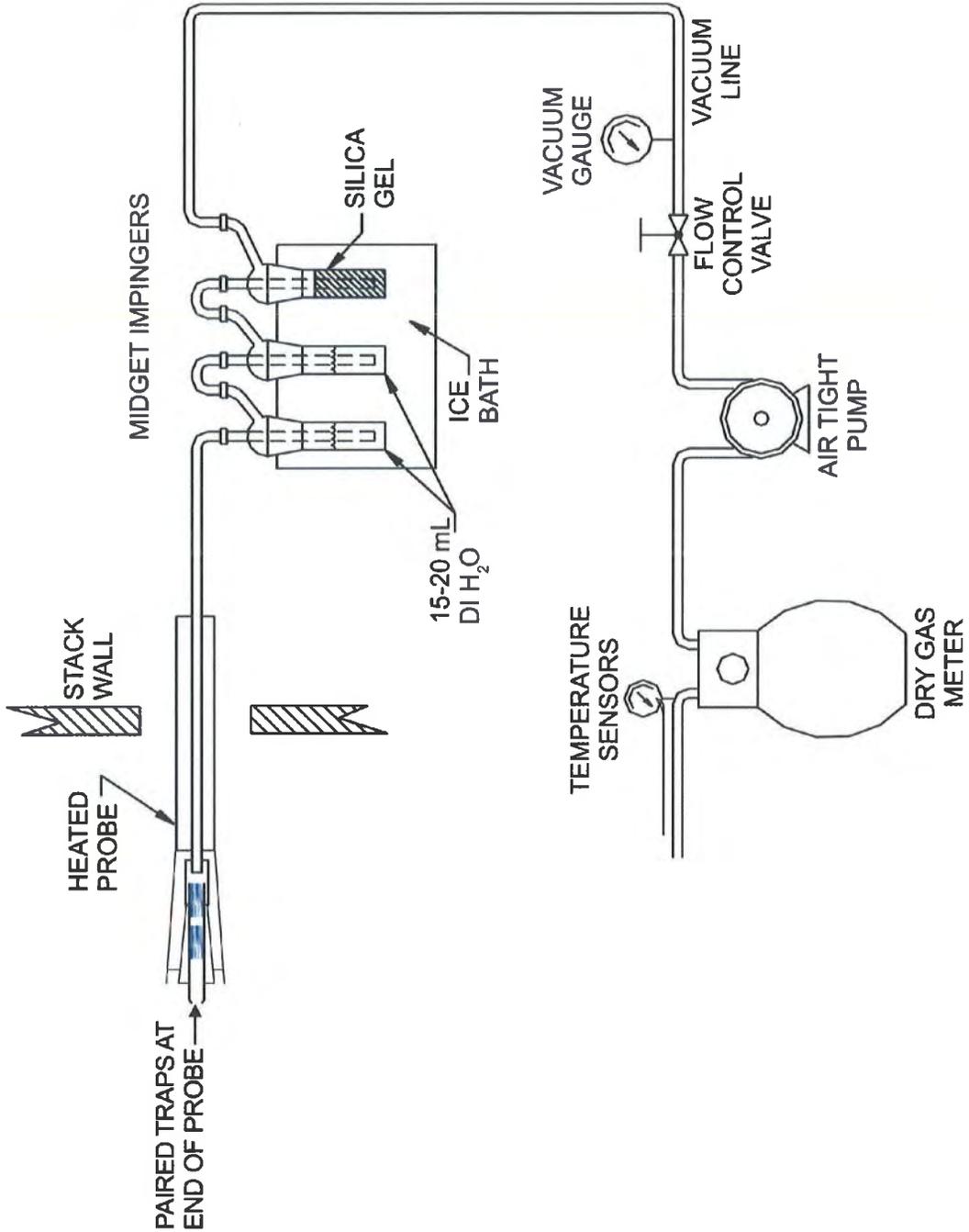


Figure B-4 Method 30B Sampling Train
(Actual system includes two distinct traps, moisture knockout, and volume metering systems)



APPENDIX C
FIELD DATA –
No. 1 COMBINATION BOILER



PARTICULATE MATTER AND HYDROGEN CHLORIDE

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB1

ISOKINETIC CALCULATIONS

Run Number		1	2	3	Mean
Date		2/18/20 ✓	2/18/20 ✓	2/18/20 ✓	---
Time Began		1018 ✓	1236 ✓	1432 ✓	---
Time Ended		1126 ✓	1349 ✓	1541 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	60.0 ✓	60.0 ✓	60.0 ✓	60
Stack Diameter, in.	(Dia.)	120.0 ✓	120.0 ✓	120.0 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.50 ✓	29.50 ✓	29.50 ✓	29.50
Static Pressure, in. H2O	(Pg)	-0.81 ✓	-0.81 ✓	-0.81 ✓	-0.81
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.009 ✓	1.009 ✓	1.009 ✓	1.0090
Orifice Calibration Value	(Delta H@)	1.615 ✓	1.615 ✓	1.615 ✓	1.6150
Nozzle Diameter, in.	(Dn)	0.280 ✓	0.280 ✓	0.280 ✓	0.280
Meter Volume, ft^3	(Vm)	36.935 ✓	37.630 ✓	37.993 ✓	37.519
Meter Temperature, °F	(Tm)	60.8 ✓	62.6 ✓	63.5 ✓	62.3
Meter Temperature, °R	(Tm-R)	520.8	522.6	523.5	522.3
Meter Orifice Pressure, in. H2O	(Delta H)	1.318 ✓	1.304 ✓	1.328 ✓	1.317
Ave Sq Rt Orifice Press, (in. H2O)^½	((Delta H)½)avg	1.119 ✓	1.112 ✓	1.121 ✓	1.117
Volume H2O Collected, mL	(Vlc)	221.4 ✓	235.5 ✓	229.5 ✓	228.8
CO2 Concentration, %	(CO2)	11.6 ✓	11.9 ✓	11.7 ✓	11.7
O2 Concentration, %	(O2)	8.9 ✓	8.6 ✓	8.7 ✓	8.7
Ave Sq Rt Velo Head, (in. H2O)^½	((Delta P)½)avg	0.697 ✓	0.696 ✓	0.698 ✓	0.697
Stack Temperature, °F	(Ts)	392.1 ✓	395.9 ✓	392.3 ✓	393.4
Stack Temperature, °R	(Ts-R)	852.1	855.9	852.3	853.4
Particulate Collected, g	(Mn)	0.0187 ✓	0.0137 ✓	0.0139 ✓	0.0154
O2 F-Factor, dscf/MMBtu	(Fd)	9659	9659	9660	9659
CALCULATED DATA					
Nozzle Area, ft²	(An)	4.28E-04 ✓	4.28E-04	4.28E-04	4.28E-04
Stack Area, ft²	(As)	78.54	78.54	78.54	78.54
Stack Pressure, in. Hg	(Ps)	29.44 ✓	29.44	29.44	29.44
Meter Pressure, in. Hg	(Pm)	29.60 ✓	29.60	29.60	29.60
Standard Meter Volume, ft³	(Vmstd)	37.363 ✓	37.928	38.233	37.841
Standard Water Volume, ft³	(Vwstd)	10.421 ✓	11.085	10.803	10.770
Moisture Fraction (Measured)	(BWS)	0.218 ✓	0.226	0.220	0.222
Moisture Fraction (lower sat/meas)	(BWS)	0.218 ✓	0.226	0.220	0.222
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	30.21 ✓	30.25	30.22	30.23
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.55 ✓	27.48	27.53	27.52
Average Stack Gas Velocity, ft/sec	(Vs)	51.33 ✓	51.41	51.40	51.38
Stack Gas Flow, actual, ft³/min	(Qa)	241900 ✓	242269	242223	242131
Stack Gas Flow, Std, ft³/min	(Qs)	115280 ✓	113751	115085	114705
Isokinetic Sampling Rate, %	(%I)	99.2 ✓	102.1	101.7	101.0
Particulate Conc @ Std Cond, gr/ft³	(Cs)	0.0077 ✓	0.0056	0.0056	0.0063
Particulate Emission, lb/hr	(PMR)	7.630 ✓	5.433	5.533	6.199
Particulate Emission Factor, lb/MMBtu	(Fd)	0.0186 ✓	0.0131	0.0133	0.0150
Calibration check	(Yqa)	1.0499 ✓	1.0253	1.0250	1.033
Percent difference from Y					2.42%

SH

sqp

New Indy, Catawba LLC
 Catawba, SC

15730.001.003
 CB1

HYDROGEN CHLORIDE EMISSION CALCULATIONS

Run Number	1	2	3	Average
Date	2/18/20 ✓	2/18/20 ✓	2/18/20 ✓	-----
Time Began	1018 ✓	1236 ✓	1432 ✓	-----
Time Ended	1126 ✓	1349 ✓	1541 ✓	-----
Volumetric Flow Rate, dscfm	1.15E+5 ✓	1.14E+5 ✓	1.15E+5 ✓	1.15E+05 ✓
Sample Volume, ft ³	37.36 ✓	37.93 ✓	38.23 ✓	37.84 ✓
Corrected Sample Volume, L	1058.12	1074.12	1082.76	1071.67
% Oxygen	8.9 ✓	8.6 ✓	8.7 ✓	8.7 ✓
O2 F-factor, dscfm	MMBtu 9659 ✓	9659 ✓	9660 ✓	9659 ✓
Hydrogen Chloride				
Molecular Weight, µg/µg-mole	36.50 ✓	36.50	36.50	36.50
Mass of Sample, µg	1230.00 ✓	745.00 ✓	656.00 ✓	877.00
Concentration, ppm	0.77	0.46	0.40	0.54
Emission Rate, lb/hr	0.50	0.30	0.26	0.35
Emission Factor, lb/MMBtu	1.22E-03	7.09E-04	6.24E-04	8.50E-04

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy
W.O.#	15730.001.003
Project ID	Boiler MACT
Mode/Source ID	No. 1 Combo Boiler
Source ID #	Stack
Run No. ID	1
Test Method ID	M 5/26A
Filter Number	18 3700
Source Location	Stack
Sample Date	2/15/20
Baro. Press (in Hg)	** 29.5
Operator	AL

Stack Conditions	Assumed	Actual
% Moisture	19%	
Impinger Vol (ml)		208.7
Silica gel (g)		11.7
CO2, % by Vol	13.3	11.6
O2, % by Vol	6.8	8.9
Temperature (°F)	387	
Meter Temp (°F)	M 5/26A	
Static Press (in H2O)	-62	-41

Meter Box ID	AC15
Meter Box Y	1.009
Meter Box Del H	1.615
Probe ID / Length	AK5T 54T
Probe Material	Boro
Pitot / Thermocouple ID	827A AK18
Pitot Coefficient	0.84
Nozzle ID / Caliper ID	2.80 AC-6
Avg Nozzle Dia (in)	2.401.2601.250
Area of Stack (ft²)	78.54
Sample Time	60
Total Traverse Pts	24

K Factor	2562.6
Leak Checks	Initial
Sample Train (ft³)	204
Leak Check @ (in Hg)	8
Pitot good	yes / no
Orsat good	yes / no
Temp Check	Pre-Test Set
Meter Box Temp	Post-Test Set
Reference Temp	
Pass/Fail (+/- 2°)	Pass / Fail
Temp Change Response?	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 248°-273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
1	0	10:14	.55	1.4	807.8	389	58	261	265	252	54	1	
2	2.5		.46	1.2	809.3	391	58.54	262	266	253	50	1	
3	7.5		.45	1.2	810.4	392	58	263	266	255	48	1	
4	10		.35	.91	812.3	392	58	264	265	256	47	1	
5	12.5		.28	.72	813.5	390	59	261	263	258	46	1	
6	15		.22	.57	814.6	389	59	260	262	257	47	1	
1	17.5		.80	2.0	816.5	389	60	262	262	254	47	3	
2	20		.43	2.1	818.6	390	60	261	263	255	48	3	
3	22.5		.43	2.1	820.7	390	60	260	264	257	48	3	
4	25		.75	1.9	822.5	390	61	262	264	257	49	3	
5	27.5		.32	.83	823.9	391	61	264	265	259	49	1	
6	30		.25	.65	825.1	392	61	265	266	258	50	1	
1	32.5		.56	1.5	827.0	393	61	266	264	251	51	1.5	
2	35		.50	1.3	824.1	393	62	264	262	252	51	1.5	
3	37.5		.41	1.0	829.8	394	62	263	262	254	51	1	
4	40		.32	.83	831.3	394	62	262	262	256	51	1	
5	42.5		.27	.76	832.3	393	62	264	262	258	51	1	
6	45		.23	.59	833.6	394	62	261	263	259	51	1	
1	47.5		.74	2.0	835.4	394	62	263	263	260	52	3	
2	50		.84	2.2	837.4	394	62	264	261	253	50	3.5	
3	52.5		.84	2.2	839.6	395	62	263	260	254	50	3.5	
4	55		.86	2.1	841.2	394	62	262	266	258	51	3.5	
5	57.5		.36	.936	842.8	393	63	261	261	253	51	3.3	
6	60	11:26	.27	.70	844.8	394	63	262	262	255	51	1.5	
				1.518									
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Min/Max	Max Temp.	Max VAC	
			.6474	1.371	37.736935	392.08	60.75	260/266	260/266	261/266	54	3.5	
			Avg Delta P	Avg Sqrt Del H	Comments:								
			.5125	1.1189	Sample I.D.:								



Integrated Air Services
**At Stack Elevation

Probe, Filter, Exit TEMPS
Meth. 5, 5 P&P = 248*
Meth. 5B = 320*
Or Otherwise Specified by Method

Calculated by:
ISO % =
MOIST % =
SCFM =
SVOL =
QC by: APV

15730.001.003
#1 & #2 CB
NESHAP BM
Compliance

Elton Guinyard
803-898-2295
guinyard@dhc-sc.gov

56-504227310-2
2-15-20

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy
W.O.#	15730.001.003
Project ID	Boiler MACT
Mode/Source ID	No. 1 Combo Boiler
Source ID #	Stack
Run No. ID	2
Test Method ID	M 5/26A
Filter Number	DB3701
Source Location	Stack
Sample Date	2/15/10
Baro. Press (in Hg)	** 29.5
Operator	APL

Stack Conditions	Assumed	Actual
% Moisture	19%	
Impinger Vol (ml)		231.7
Silica gel (g)		13.5
CO2, % by Vol	13.3	
O2, % by Vol	6.8	
Temperature (°F)	387	
Meter Temp (°F)	66	
Static Press (in H2O)	-62	

Meter Box ID	AP18
Meter Box Y	1.004
Meter Box Del H	1.615
Probe ID / Length	PR5T 54F
Probe Material	Boro
Pitot / Thermocouple ID	PR74 AP18
Pitot Coefficient	0.84
Nozzle ID / Caliper ID	288 / 280 / 260
Avg Nozzle Dia (in)	78.54
Area of Stack (ft²)	60
Sample Time	24
Total Traverse Pts	24

K Factor	2.6
Leak Checks	Initial
Sample Train @ (in Hg)	0.00
Leak Check @ (in Hg)	yes / no
Pitot good	yes / no
Orsat good	yes / no
Temp Check	Pre-Test Set
Meter Box Temp	Pass / Fail
Reference Temp	Pass / Fail
Pass/Fail (+/- 2°)	yes / no
Temp Change Response ?	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
1	0	12:36	.45	2.2	44.800	346	60	264	262	250	57	3.5	
2	2.5		.84	2.1	846.3	395	60	264	266	251	55	3.5	
3	7.5		.84	2.0	850.4	396	61	265	265	251	55	3.5	
4	10		.79	2.0	852.3	395	61	264	264	255	55	3.5	
5	12.5		.34	.84	853.7	394	61	262	261	257	55	1	
6	15		.27	.70	854.9	396	61	263	263	258	55	1	
1	17.5		.58	1.5	856.6	396	61	260	262	259	56	2.5	
2	20		.48	1.3	854.4	397	62	262	263	260	56	3	
3	22.5		.46	1.0	854.5	397	62	263	261	258	56	3	
4	25		.32	.93	861.0	396	62	264	262	257	56	1.5	
5	27.5		.26	.67	862.0	396	62	263	263	259	56	1	
6	30		.22	.57	863.1	397	62	261	264	260	56	1	
1	32.5		.22	2.1	865.0	396	63	263	262	254	56	4	
2	35		.22	2.1	867.1	395	63	264	260	255	55	4	
3	37.5		.23	2.1	868.0	396	64	263	260	257	56	4	
4	40		.15	1.8	871.3	397	64	263	260	261	56	4	
5	42.5		.36	.93	872.6	397	64	262	262	262	57	2	
6	45		.25	.65	873.6	397	64	261	265	262	57	1	
1	47.5		.55	1.4	874.6	394	64	260	267	258	58	3	
2	50		.46	1.2	877.0	396	64	260	264	264	58	3	
3	52.5		.36	.93	878.2	395	64	254	267	265	58	2	
4	55		.22	.83	874.6	396	65	257	267	264	59	1.5	
5	57.5		.23	.65	880.7	397	65	256	267	265	60	1	
6	60	13:44	.25	.65	881.830	398	65	256	268	265	60	1	
						Avg Ts	Avg Tm	Min/Max	Min/Max	Min/Max	Max Temp	Max VAC	
						395.940	62.605	256/265	260/268	250/265	60	4	
						Total Volume							
						37.63							
						Avg Delta P	Avg Delta H						
						1.511	1.111						
						Comments:							
						Sample I.D.:							
						1.111							

Calculated by: _____

ISO % = _____

MOIST % = _____

SCFM = _____

SVOL = _____

QC by: AM

Probe, Filter, Exit TEMPS

Meth. 5, 5 P&P = 248*

Meth. 5B = 320*

Or Otherwise Specified by Method

15730.001.003 #1 & #2 CB NESHAP BM Compliance

FLG SCHEERMAN 2-18-10

WESTON SOLUTIONS Integrated Air Services At Stack Elevation

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy
W.O.#	15730.001.003
Project ID	Boiler MACT
Mode/Source ID	No. 1 Combo Boiler
Source ID #	Stack
Run No. ID	3
Test Method ID	M 5/26A
Filter Number	21302
Source Location	Stack
Sample Date	2/18/20
Baro. Press (in Hg)	** 29.5
Operator	AS

Meter Box ID	A018
Meter Box Y	1.089
Meter Box Del H	1.615
Probe ID / Length	PR5T 5ft
Probe Material	Boro
Pitot / Thermocouple ID	P274 A019
Pitot Coefficient	0.84
Nozzle ID / Caliper ID	230 AC-6
Avg Nozzle Dia (in)	2901.2501.280
Area of Stack (ft²)	78.54
Sample Time	60
Total Traverse Pts	24

Stack Conditions	Assumed	Actual
% Moisture	19%	220.7
Impinger Vol (ml)		6.8
Silica gel (g)		11.7
CO2, % by Vol	13.3	8.7
O2, % by Vol	6.8	
Temperature (°F)	280.38	
Meter Temp (°F)	60	
Static Press (in H2O)	-62	-81

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
1	0	14:32	.57	1.5	483.985	384	62	253	255	251	52	1.5	
2	2.5		.58	1.2	887.3	385	62	254	256	251	50	1.5	
3	7.5		.40	1.0	888.6	385	62	255	256	252	47	1.5	
4	10		140.32	1.0	889.6	387	62	256	255	253	45	1	
5	12.5		.27	.70	891.4	388	63	258	256	254	45	1	
6	15		.22	.57	892.2	384	63	259	255	257	46	1	
7	17.5		.83	2.1	894.3	389	63	260	254	252	46	2.5	
8	20		.45	2.2	896.3	389	63	261	253	253	46	2.5	
9	22.5		.85	2.2	898.7	389	64	262	254	255	47	3	
10	25		.75	1.4	900.6	390	64	263	255	256	47	3	
11	27.5		.33	.45	902.0	391	64	262	254	259	48	1.5	
12	30		.26	.67	902.9	392	63	263	255	260	48	1	
13	32.5		.58	1.6	903.7	392	64	261	254	260	50	2.5	
14	35		.51	1.3	906.6	394	64	260	256	256	51	2.5	
15	37.5		.51	1.3	908.0	396	64	261	257	258	51	2.5	
16	40		.31	.80	909.2	399	63	263	257	259	51	2.5	
17	42.5		.25	.65	916.1	397	64	262	258	259	52	1	
18	45		.21	.54	911.4	396	63	262	259	260	52	1	
19	47.5		.82	2.1	913.3	395	64	263	260	252	55	3.5	
20	50		.74	2.0	915.3	397	64	264	258	255	55	3.5	
21	52.5		.84	2.2	917.4	398	64	266	257	256	56	3.5	
22	55		.76	2.0	914.9	398	65	267	256	257	57	3.5	
23	57.5		.32	.83	920.7	397	65	266	258	257	57	1	
24	60	15:41	.23	.65	921.918	397	65	265	260	259	59	1	

Leak Checks
 Sample Train (ft³) .013
 Leak Check @ (in Hg) 8
 Pitot good yes / no
 Orsat good yes / no

Temp Check
 Meter Box Temp
 Reference Temp
 Pass/Fail (+/- 2°)
 Temp Change Response? yes / no

Pre-Test Set
 Pass / Fail
 yes / no

Post-Test Set
 Pass / Fail
 yes / no

Final
 .006
 6
 yes / no
 yes / no

Calculated by: _____
 ISO % = _____
 MOIST % = _____
 SCFM = _____
 SVOL = _____

QC by: 107

Elton Guinyard
 SC/HEC-BAQ
 2600 Bull st, Colary, SC 29201
 2015-2017

Weston SOLUTIONS
 Integrated Air Services
 Stack Elevation

Sample I.D.:
 Avg Sqrt Delta P 1.6496
 Avg Delta P 1.51456
 Avg Sqrt Del H 1.121
 Avg Del H 1.3288
 Total Volume 37.993
 Avg Ts 392.95
 Avg Tm 63.5
 Probe, Filter, Exit TEMPS
 Meth. 5, 5 P&P = 248*
 Meth. 5B = 320*
 Or Otherwise Specified by Method

SAMPLE RECOVERY FIELD DATA

Method: M 5/26A

Client New Indy W.O. # 15730.001.003
 Location/Plant Catawba, SC Source & Location No. 2 Combo Boiler
 Impingers 1 - 7 measured in Grams or ml (circle one)

Run No. 1 Sample Date 2-18-20 Recovery Date 2-18-20
 Sample I.D. No. 1 Combo Boiler BMACT HCL Analyst M. Carroll Filter Number DB3700

	Impinger							Imp. Total	8 (grams)	Total
	1	2	3	4	5	6	7			
Contents	<u>.1N H2SO4</u>	<u>.1N H2SO4</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>878.9</u>	<u>674.3</u>	<u>621.8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>907.5</u>	
Initial	<u>724.7</u>	<u>626.1</u>	<u>614.3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>895.8</u>	<u>✓</u>
Gain	<u>154.2</u>	<u>48.2</u>	<u>7.3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>209.7</u>	<u>11.7</u>	<u>221.4</u>

Impinger Color clear Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Run No. 2 Sample Date 2-18-20 Recovery Date 2-18-20
 Sample I.D. No. 1 CB BMACT HCL Analyst M. Carroll Filter Number DB3701

	Impinger							Imp. Total	8 (grams)	Total
	1	2	3	4	5	6	7			
Contents	<u>.1N H2SO4</u>	<u>.1N H2SO4</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>763.9</u>	<u>638.0</u>	<u>595.1</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>302</u>	<u>843.0</u>	
Initial	<u>612.9</u>	<u>578.0</u>	<u>584.1</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>222</u>	<u>829.5</u>	
Gain	<u>151</u>	<u>60</u>	<u>10.7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>221.7</u>	<u>13.5</u>	<u>235.2</u>

Impinger Color clear Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Run No. 3 Sample Date 2-18-20 Recovery Date 2-18-20
 Sample I.D. No. 1 GB BMACT HCL Analyst M. Carroll Filter Number DB3702

	Impinger							Imp. Total	8 (grams)	Total
	1	2	3	4	5	6	7			
Contents				<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>898.6</u>	<u>673.0</u>	<u>623.3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>916.3</u>	
Initial	<u>727.5</u>	<u>629.3</u>	<u>617.4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>✓</u>	<u>907.5</u>	<u>✓</u>
Gain	<u>171.1</u>	<u>43.7</u>	<u>5.9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>220.7</u>	<u>8.8</u>	<u>229.5</u>

Impinger Color clear Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Check COC for Sample ID's of Media Blanks "X" or "/" out unused Impinger blocks

Acetone Lot # _____	HPLC H2O Lot # <u>52P2-11</u>	Bal. Id. # <u>E53</u>
Hexane Lot # _____	Purge Regulator # _____	N2 Cyl. # <u>9512-80</u>
For Meth. 202 Recovery <u>.1N H2SO4</u>		



Sample and Velocity Traverse Point Data Sheet - Method 1

Client New-Indus (Catawba) LLC
Resolute Forest Products, AB 312 ✓ Operator P.E. J.
Location/Plant Catawba, S.C. Date 3/16/17
Source No. 1 C.B. W.O. Number 03917 008 035 15730.001.003

Duct Type Circular Rectangular Duct Indicate appropriate type
Traverse Type Particulate Traverse Velocity Traverse

TS
2-18-20
AB
312 ✓

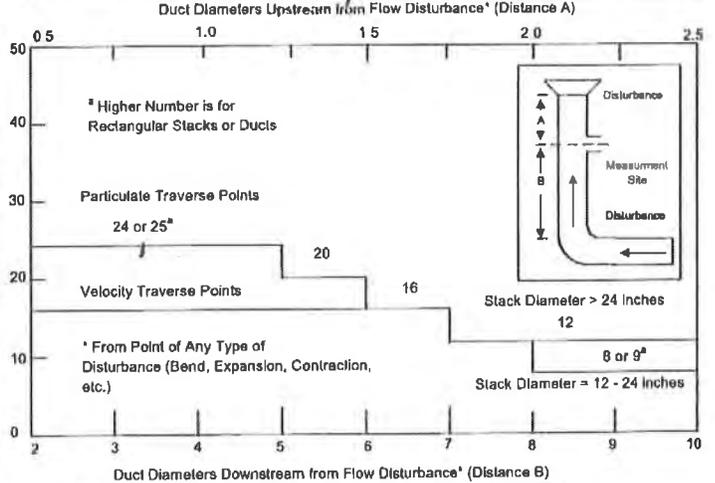
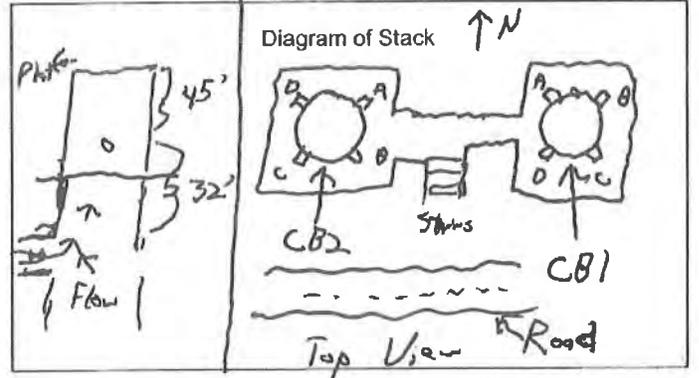
Distance from far wall to outside of port (in.) = C	127.5
Port Depth (in.) = D	7.5
Depth of Duct, diameter (in.) = C-D	120.0
Area of Duct (ft ²)	78.54
Total Traverse Points	24
Total Traverse Points per Port	6

Rectangular Ducts Only

Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations			
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	2.1	2.52	10.0
2	6.7	8.04	15.5
3	11.8	14.16	21.5
4	17.7	21.24	28.5
5	25.0	30.00	37.5
6	35.6	42.72	50.0
7			
8			
9			
10			
11			
12			

Flow Disturbances	
Upstream - A (ft)	45
Downstream - B (ft)	32
Upstream - A (duct diameters)	4.5
Downstream - B (duct diameters)	3.2



Equivalent Diameter = $(2 \cdot L \cdot W) / (L + W)$

Traverse Point Location Percent of Stack - Circular													
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t L o c a t i o n	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3				75		29.6		19.4		14.6		11.8
	4				93.3		70.4		32.3		22.6		17.7
	5						85.4		67.7		34.2		25
	6						95.6		80.6		65.8		35.6
	7								89.5		77.4		64.4
	8								96.8		85.4		75
	9										91.8		82.3
	10										97.4		88.2
	11												93.3
	12												97.9

Traverse Point Location Percent of Stack - Rectangular													
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t L o c a t i o n	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
	6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7							92.9	81.3	72.2	65.0	59.1	54.2
	8								93.8	83.3	75.0	68.2	62.5
	9									94.4	85.0	77.3	70.8
	10										95.0	86.4	79.2
	11											95.5	87.5
	12												95.8

Rectangular Stack Points & Matrix

- 9 - 3 x 3
- 12 - 4 x 3
- 16 - 4 x 4
- 20 - 5 x 4
- 25 - 5 x 5
- 30 - 6 x 5
- 36 - 6 x 6
- 42 - 7 x 6
- 49 - 7 x 7





CARBON MONOXIDE

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB1

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	2/18/20 ✓	2/18/20 ✓	2/18/20 ✓	---
Time Began	1018 ✓	1236 ✓	1432 ✓	---
Time Ended	1118 ✓	1339 ✓	1537 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	1.15E+05 ✓	1.14E+05 ✓	1.15E+05 ✓	1.15E+05
BWS	0.218 ✓	0.226 ✓	0.220 ✓	0.222
% Oxygen	8.9 ✓	8.6 ✓	8.7 ✓	8.7
Oxygen Reference Concentration, %	3.0	3.0	3.0	3.0
O2 F-Factor, dscf/MMBtu	9659 ✓	9659 ✓	9660 ✓	9659
<hr/>				
Carbon Monoxide	MW= 28.00			
Concentration, ppm	1263.0 ✓	1118.0 ✓	1258.0 ✓	1213.0
Concentration, ppm @3%O2	1884.0 ✓	1627.0 ✓	1845.8 ✓	1785.6
Emission Rate, lb/hr	634.70 ✓	554.38 ✓	631.12 ✓	606.74
Emission Factor, lb/MMBtu	1.5408 ✓	1.3307 ✓	1.5097 ✓	1.4604

AM ✓

RUN SUMMARY

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Calibration 1

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Method	O ₂	CO ₂	CO
Conc. Units	EPA 3A	EPA 3A	EPA 10
	%	%	ppm

Time: 10:18 to 11:18

Run Averages

8.8 11.3 1273

Pre-run Bias at 10:06

Zero Bias	-0.3	0.3	-2
Span Bias	9.8	9.8	1265
Span Gas	10.0	10.0	1274

Post-run Bias at 11:21

Zero Bias	-0.3	0.1	-10
Span Bias	9.9	9.7	1302
Span Gas	10.0	10.0	1274

Run averages corrected for the average of the pre-run and post-run bias

8.9 ✓ 11.6 ✓ 1263 ✓

MS

RUN SUMMARY

Number 2

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB1**

Calibration 1

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **18 Feb 2020**

Method Conc. Units	O ₂	CO ₂	CO
	EPA 3A %	EPA 3A %	EPA 10 ppm

Time: 12:36 to 13:39

Run Averages

8.4 11.5 1139

Pre-run Bias at 11:21

Zero Bias	-0.3	0.1	-10
Span Bias	9.9	9.7	1302
Span Gas	10.0	10.0	1274

Post-run Bias at 13:39

Zero Bias	-0.2	0.1	-10
Span Bias	9.9	9.7	1297
Span Gas	10.0	10.0	1274

Run averages corrected for the average of the pre-run and post-run bias

8.6 ✓ 11.9 ✓ 1118 ✓

AW

RUN SUMMARY

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Method	O ₂	CO ₂	CO
Conc. Units	EPA 3A	EPA 3A	EPA 10
	%	%	ppm

Time: 14:32 to 15:37

Run Averages

8.7 11.3 1281

Pre-run Bias at 13:39

Zero Bias	-0.2	0.1	-10
Span Bias	9.9	9.7	1297
Span Gas	10.0	10.0	1274

Post-run Bias at 15:39

Zero Bias	-0.2	0.2	-2
Span Bias	10.1	9.6	1299
Span Gas	10.0	10.0	1274

Run averages corrected for the average of the pre-run and post-run bias

8.7 ✓ 11.7 ✓ 1258 ✓

RUN DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
10:19	3944	9.2	3188	10.4	1904	570
10:20	3721	8.6	3348	10.9	3042	922
10:21	3678	8.5	3456	11.3	3699	1126
10:22	3779	8.8	3483	11.4	3197	970
10:23	3854	9.0	3439	11.2	2831	857
10:24	3761	8.8	3442	11.2	3032	919
10:25	3667	8.5	3497	11.4	4776	1459
10:26	3660	8.5	3529	11.5	5022	1536
10:27	3679	8.5	3538	11.5	5427	1661
10:28	3861	9.0	3481	11.3	3946	1202
10:29	3965	9.3	3390	11.0	2116	635
10:30	3808	8.9	3402	11.1	2503	755
10:31	3624	8.4	3503	11.4	4803	1468
10:32	3620	8.4	3562	11.6	5634	1725
10:33	3829	8.9	3509	11.4	3467	1054
10:34	3798	8.9	3454	11.3	2768	837
10:35	3661	8.5	3499	11.4	4180	1275
10:36	3777	8.8	3487	11.4	4384	1338
10:37	3744	8.7	3477	11.3	4226	1289
10:38	3866	9.0	3446	11.2	3278	995
10:39	3935	9.2	3381	11.0	2469	745
10:40	3836	9.0	3372	11.0	2920	884
10:41	3748	8.7	3431	11.2	3997	1218
10:42	3676	8.5	3482	11.3	4642	1418
10:43	3612	8.4	3536	11.5	5754	1763
10:44	3598	8.3	3560	11.6	5515	1688
10:45	3676	8.5	3548	11.6	4572	1396
10:46	3675	8.5	3533	11.5	4553	1390
10:47	3661	8.5	3541	11.5	4644	1419
10:48	3687	8.6	3536	11.5	4491	1371
10:49	3646	8.4	3535	11.5	4562	1393
10:50	3613	8.4	3563	11.6	5564	1704
10:51	3641	8.4	3576	11.7	5389	1649
10:52	3770	8.8	3521	11.5	4120	1256
10:53	3668	8.5	3512	11.4	4445	1357
10:54	3704	8.6	3529	11.5	4734	1446
10:55	3684	8.6	3522	11.5	5017	1534
10:56	3523	8.1	3584	11.7	6672	2047
10:57	3554	8.2	3621	11.8	7091	2177
10:58	3624	8.4	3586	11.7	5909	1811
10:59	3564	8.2	3601	11.7	6267	1921

RUN DATA

Number 1

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB1**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
11:00	3715	8.6	3576	11.7	5350	1637
11:01	3715	8.6	3517	11.5	4484	1369
11:02	3617	8.4	3551	11.6	5008	1531
11:03	3705	8.6	3541	11.5	5066	1549
11:04	3709	8.6	3523	11.5	5455	1670
11:05	3743	8.7	3496	11.4	4817	1472
11:06	3717	8.6	3522	11.5	5678	1739
11:07	3812	8.9	3471	11.3	4527	1382
11:08	3781	8.8	3468	11.3	4435	1354
11:09	4001	9.4	3382	11.0	3617	1100
11:10	4116	9.7	3278	10.7	2619	791
11:11	4144	9.8	3206	10.4	2285	688
11:12	4117	9.7	3209	10.4	2183	656
11:13	4213	10.0	3163	10.3	1431	423
11:14	4001	9.4	3202	10.4	2587	781
11:15	3676	8.5	3378	11.0	4157	1268
11:16	3744	8.7	3481	11.3	3971	1210
11:17	3858	9.0	3430	11.2	2451	739
11:18	3894	9.1	3408	11.1	2742	829
Avgs	3761	8.8	3467	11.3	4174	1273

RUN DATA

Number 2

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB1**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
12:37	3782	8.8	3445	11.2	2442	736
12:38	3747	8.7	3484	11.4	3049	924
12:39	3756	8.7	3500	11.4	3151	956
12:40	3803	8.9	3475	11.3	2634	796
12:41	3778	8.8	3483	11.4	3040	922
12:42	3803	8.9	3476	11.3	2915	883
12:43	3800	8.9	3469	11.3	2741	829
12:44	3762	8.8	3510	11.4	2980	903
12:45	3901	9.1	3414	11.1	2340	705
12:46	3940	9.2	3382	11.0	1762	526
12:47	3897	9.1	3371	11.0	1553	461
12:48	3911	9.2	3359	10.9	1674	498
12:49	3928	9.2	3350	10.9	1758	524
12:50	3881	9.1	3380	11.0	1890	565
12:51	3820	8.9	3409	11.1	2096	629
12:52	3718	8.6	3460	11.3	2708	819
12:53	3687	8.6	3509	11.4	2910	881
12:54	3643	8.4	3539	11.5	3802	1158
12:55	3550	8.2	3598	11.7	4192	1279
12:56	3522	8.1	3624	11.8	4111	1253
12:57	3490	8.0	3660	11.9	4352	1328
12:58	3539	8.2	3647	11.9	4002	1220
12:59	3614	8.4	3600	11.7	4079	1244
13:00	3696	8.6	3544	11.6	3840	1169
13:01	3738	8.7	3489	11.4	2872	870
13:02	3758	8.7	3462	11.3	2550	770
13:03	3711	8.6	3463	11.3	2600	785
13:04	3661	8.5	3507	11.4	2850	863
13:05	3594	8.3	3544	11.6	2848	862
13:06	3532	8.1	3587	11.7	3515	1069
13:07	3565	8.2	3593	11.7	3427	1041
13:08	3512	8.1	3599	11.7	3722	1133
13:09	3473	8.0	3633	11.9	4417	1348
13:10	3409	7.8	3669	12.0	4231	1291
13:11	3427	7.9	3680	12.0	5023	1536
13:12	3399	7.8	3700	12.1	5311	1625
13:13	3453	7.9	3681	12.0	4163	1270
13:14	3500	8.1	3639	11.9	3000	909
13:15	3476	8.0	3613	11.8	4054	1236
13:16	3353	7.7	3685	12.0	6815	2091
13:17	3367	7.7	3714	12.1	6161	1889

RUN DATA

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
13:18	3357	7.7	3702	12.1	7074	2172
13:19	3311	7.6	3725	12.2	8142	2502
13:20	3470	8.0	3674	12.0	5773	1768
13:21	3504	8.1	3615	11.8	4248	1296
13:22	3453	7.9	3623	11.8	5360	1640
13:23	3450	7.9	3657	11.9	5604	1716
13:24	3542	8.2	3595	11.7	4407	1345
13:25	3475	8.0	3603	11.8	4521	1380
13:26	3487	8.0	3620	11.8	4064	1239
13:27	3493	8.0	3610	11.8	4064	1239
13:28	3460	8.0	3626	11.8	3604	1096
13:29	3384	7.8	3673	12.0	3853	1173
13:30	3181	7.2	3779	12.3	7392	2270
13:31	3084	7.0	3868	12.6	9790	3013
13:32	3362	7.7	3848	12.6	9606	2956
13:33	4790	11.5	3124	10.1	2578	778
13:34	4114	9.7	3019	9.8	890	255
13:35	3419	7.8	3507	11.4	2799	847
13:36	3624	8.4	3620	11.8	2566	775
13:37	4353	10.3	3221	10.5	737	208
13:38	4056	9.5	3183	10.3	573	157
13:39	4043	9.5	3249	10.6	574	157
Avg	3640	8.4	3541	11.5	3743	1139

RUN DATA

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
14:33	4055	9.5	3187	10.4	1930	578
14:34	4108	9.7	3187	10.4	1758	524
14:35	3978	9.3	3223	10.5	1764	526
14:36	3960	9.3	3296	10.7	2216	666
14:37	4078	9.6	3240	10.5	1794	535
14:38	3935	9.2	3262	10.6	1999	599
14:39	3767	8.8	3374	11.0	2944	892
14:40	3882	9.1	3385	11.0	2406	725
14:41	3945	9.2	3339	10.9	1953	585
14:42	3991	9.4	3283	10.7	1651	491
14:43	3861	9.0	3348	10.9	2741	829
14:44	3866	9.0	3362	10.9	2526	762
14:45	3707	8.6	3440	11.2	3540	1077
14:46	3746	8.7	3473	11.3	4097	1249
14:47	3843	9.0	3429	11.2	3710	1129
14:48	4108	9.7	3301	10.7	2369	714
14:49	4132	9.7	3199	10.4	1946	583
14:50	4031	9.5	3240	10.5	2162	650
14:51	4188	9.9	3218	10.5	2112	634
14:52	4268	10.1	3118	10.1	1493	442
14:53	4188	9.9	3117	10.1	1877	561
14:54	4107	9.7	3184	10.3	2759	835
14:55	3838	9.0	3273	10.6	3330	1011
14:56	3355	7.7	3591	11.7	8457	2600
14:57	3266	7.4	3763	12.3	10000	3078
14:58	4191	9.9	3443	11.2	4583	1400
14:59	4052	9.5	3251	10.6	1164	340
15:00	3690	8.6	3419	11.1	2801	848
15:01	3657	8.5	3508	11.4	3785	1152
15:02	3646	8.4	3546	11.6	4342	1325
15:03	3720	8.6	3507	11.4	3536	1075
15:04	3593	8.3	3550	11.6	5029	1538
15:05	3568	8.2	3581	11.7	5909	1811
15:06	3499	8.1	3627	11.8	5839	1789
15:07	3587	8.3	3600	11.7	5436	1664
15:08	3624	8.4	3555	11.6	3938	1200
15:09	3685	8.6	3528	11.5	4208	1283
15:10	3812	8.9	3444	11.2	3931	1198
15:11	3707	8.6	3453	11.2	3887	1184
15:12	3627	8.4	3505	11.4	4318	1318
15:13	3600	8.3	3537	11.5	4790	1464

RUN DATA

Number 3

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB1**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
15:14	3518	8.1	3570	11.6	5813	1781
15:15	3460	8.0	3640	11.9	6983	2143
15:16	3513	8.1	3627	11.8	6470	1984
15:17	3576	8.3	3602	11.8	5702	1746
15:18	3614	8.4	3570	11.6	4256	1298
15:19	3652	8.5	3537	11.5	4360	1331
15:20	3659	8.5	3533	11.5	4548	1389
15:21	3551	8.2	3554	11.6	5635	1726
15:22	3541	8.2	3590	11.7	6587	2021
15:23	3529	8.1	3616	11.8	5888	1804
15:24	3459	8.0	3642	11.9	6381	1957
15:25	3500	8.1	3645	11.9	7090	2177
15:26	3504	8.1	3623	11.8	6352	1948
15:27	3433	7.9	3661	12.0	6243	1914
15:28	3517	8.1	3643	11.9	6507	1996
15:29	3650	8.5	3578	11.7	4686	1432
15:30	3677	8.5	3515	11.5	4735	1447
15:31	3617	8.4	3535	11.5	4667	1426
15:32	3577	8.3	3566	11.6	4857	1485
15:33	3581	8.3	3580	11.7	5299	1622
15:34	3594	8.3	3559	11.6	4988	1525
15:35	3567	8.2	3587	11.7	5438	1665
15:36	3630	8.4	3561	11.6	4860	1486
15:37	3635	8.4	3537	11.5	3657	1113
Avg	3739	8.7	3461	11.3	4200	1281

BIAS

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 09:36

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	444	0.0	0.1	0.5 ✓	Pass
Span	10.2	4205	9.9	-0.3	-1.5 ✓	Pass

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	196	0.3	0.2	1.0 ✓	Pass
Span	9.7	3013	9.8	0.1	0.5 ✓	Pass

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-13	25	-13	0	0.0 ✓	Pass
Span	1301	4177	1274	-27	-1.1 ✓	Pass

✓

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 10:06

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	335	-0.3	-0.2	-1.0	✓ Pass
Span	10.2	4167	9.8	-0.4	-2.0	✓ Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.0	335	-0.3	-0.3	✓ Pass	
Span	9.9	4167	9.8	-0.1	✓ Pass	

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	196	0.3	0.2	1.0	✓ Pass
Span	9.7	3034	9.8	0.1	0.5	✓ Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.3	196	0.3	0.0	✓ Pass	
Span	9.8	3034	9.8	0.0	✓ Pass	

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 10:06

CO

Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-13	60	-2	11	0.4 ✓	Pass
Span	1301	4148	1265	-36	-1.4 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	%		
Zero	-13	60	-2	11	0.4 ✓	Pass
Span	1274	4148	1265	-9	-0.4 ✓	Pass

*Bias No. 1

AW

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 11:21

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	348	-0.3	-0.2	-1.0 ✓	Pass
Span	10.2	4190	9.9	-0.3	-1.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	-0.3	348	-0.3	0.0 ✓	Pass	
Span	9.8	4190	9.9	0.1 ✓	Pass	

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	162	0.1	0.0	0.0 ✓	Pass
Span	9.7	2999	9.7	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.3	162	0.1	-0.2 ✓	Pass	
Span	9.8	2999	9.7	-0.1 ✓	Pass	

*Bias No. 2

AM

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 11:21

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-13	33	-10	3	0.1 ✓	Pass
Span	1301	4268	1302	1	0.0 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	ppm	mv	ppm	%	
Zero	-2	33	-10	-0.3 ✓	Pass
Span	1265	4268	1302	37 ✓	Pass

*Bias No. 2

AW

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 13:39

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	391	-0.2	-0.1	-0.5 ✓	Pass
Span	10.2	4177	9.9	-0.3	-1.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	-0.3	391	-0.2	0.1 ✓	Pass	
Span	9.9	4177	9.9	0.0 ✓	Pass	

*Bias No. 3

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	143	0.1	0.0	0.0 ✓	Pass
Span	9.7	2999	9.7	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	143	0.1	0.0 ✓	Pass	
Span	9.7	2999	9.7	0.0 ✓	Pass	

*Bias No. 3

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 13:39

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-13	33	-10	3	0.1	Pass
Span	1301	4251	1297	-4	-0.2	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	ppm	mv	ppm	%	
Zero	-10	33	-10	0.0	Pass
Span	1302	4251	1297	-0.2	Pass

*Bias No. 3

Am

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 15:39

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	-0.1	379	-0.2	-0.1	-0.5 ✓	Pass
Span	10.2	4253	10.1	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	-0.2	379	-0.2	0.0 ✓	Pass	
Span	9.9	4253	10.1	0.2 ✓	Pass	

*Bias No. 4

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	193	0.2	0.1	0.5 ✓	Pass
Span	9.7	2975	9.6	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	193	0.2	0.1 ✓	Pass	
Span	9.7	2975	9.6	-0.1 ✓	Pass	

*Bias No. 4

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 15:39

CO

Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-13	60	-2	11	0.4 ✓	Pass
Span	1301	4258	1299	-2	-0.1 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	%		
Zero	-10	60	-2	8	0.3 ✓	Pass
Span	1297	4258	1299	2	0.1 ✓	Pass

*Bias No. 4

AW

CALIBRATION DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Start Time: 09:05

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero ✓	-	424
10.0 ✓	SG9152789BAL	4297
20.0 ✓	CC252945	7969

Curve Coefficients

Slope	Intercept	Corr. Coeff.
377.4	457 ✓	0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero ✓	-	164
10.0 ✓	SG9152789BAL	2998
20.2 ✓	CC252945	6155

Curve Coefficients

Slope	Intercept	Corr. Coeff.
296.3	120 ✓	0.9997 ✓

CALIBRATION DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Start Time: 09:05

CO

Method: EPA 10

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero	-	23
1274 ✓	CC177948	4264
2517 ✓	CC426172	8145

Curve Coefficients

Slope	Intercept	Corr. Coeff.
3.227 ✓	66 ✓	0.9998 ✓

✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 09:05

O₂

Method: EPA 3A

Span Conc. 20.0 %

Slope 377.4

Intercept 456.9

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	424	-0.1	-0.1	-0.5 ✓	Pass
10.0	4297	10.2	0.2	1.0 ✓	Pass
20.0	7969	19.9	-0.1	-0.5 ✓	Pass

CO₂

Method: EPA 3A

Span Conc. 20.2 %

Slope 296.3

Intercept 119.6

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	164	0.1	0.1	0.5 ✓	Pass
10.0	2998	9.7	-0.3	-1.5 ✓	Pass
20.2	6155	20.4	0.2	1.0 ✓	Pass

CO

Method: EPA 10

Span Conc. 2517 ppm

Slope 3.227

Intercept 66

Standard ppm	Response mv	Result ppm	Difference ppm	Error %	Status
Zero	23	-13	-13	-0.5 ✓	Pass
1274	4264	1301	27	1.1 ✓	Pass
2517	8145	2503	-14	-0.6 ✓	Pass

Handwritten signature

METHODS AND ANALYZERS

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

File: C:\Data\New Indy- Catawba\Boiler MACT CEM Files Feb 2020\CB1 Feb 18 2020 A.cem

Program Version: 2.1, built 19 May 2017 **File Version:** 2.03

Computer: TR271DT1 **Trailer:** 271

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN:E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	20.0

Channel 2

Analyte	CO ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN: E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 3

Analyte	CO
Method	EPA 10, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T300M S/N 365
Full-Scale Output, mv	10000
Analyzer Range, ppm	3000
Span Concentration, ppm	2517



MERCURY

New Indy
Catawba
Catawba, SC

15730.001.003
CB 1

CB 1
Mercury lb/Tbtu

Run No.	Dry Concentration ug/m3	Dry CO2 %	Emission Factor Total lb/MMBtu	Emission Factor Total lb/Tbtu
1	0.926 ✓	11.6 ✓	9.50E-07	0.950
2	0.650 ✓	11.9 ✓	6.51E-07	0.651
3	0.694 ✓	11.7 ✓	7.06E-07	0.706
	0.757	11.7	7.69E-07	0.769

Run 1 CO2 F-Factor 1909 ✓
Run 2 CO2 F-Factor 1909 ✓
Run 3 CO2 F-Factor 1909 ✓

mm

Method 30B
Sample Calculation Summary

Run ID	Sample Volume Vmstd L	Tube ID	Sample Mass		Breakthrough		Total Mass Hg ng	Concentration		Replicates		Field Recovery Data		
			Front ng	Back ng	%	OK?		Dry µg/m3	% RD	OK?	Mass ng	Recovery %	Recovery OK?	
1A	59.808 ✓	OLC087155	55.0 ✓	0.8 ✓	1.45	OK	55.80	0.933						
1B	59.431 ✓	OLC067137	79.0 ✓	0.6 ✓	0.76	OK	54.60	0.919				25	96.61	OK
1								0.926	0.77	OK				
2A	59.365 ✓	OLC087106	37.0 ✓	1.0 ✓	2.70	OK	38.00	0.640						
2B	58.750 ✓	OLC067175	63.0 ✓	0.8 ✓	1.27	OK	38.80	0.660				25	104.78	OK
2								0.650	1.56	OK				
3A	59.078 ✓	OL319580	39.0 ✓	2.2 ✓	5.64	OK	41.20	0.697						
3B	59.104 ✓	OLC067215	65.0 ✓	0.8 ✓	1.23	OK	40.80	0.690				25	98.33	OK
3								0.694	0.51	OK				
Average													99.90	OK

MERCURY FIELD DATA - EPA METHOD 30B

RUN 1

Client	New Indy ✓	Date	2/18/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 1 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train ✓					B Train ✓	
Meter ID		AOV15A ✓				AOV15B ✓	
Meter Correction Factor		0.9989 ✓				0.9942 ✓	
Tube ID		OLC087155 ✓				OLC067137 ✓	
Start Time		10:18 ✓				10:18 ✓	
End Time		11:25 ✓				11:25 ✓	
Sample Time		1:07				1:07	
Final DGM Reading	L	59.610 ✓				59.533 ✓	
Initial DGM Reading	L	0.000 ✓		vs. Target Volume		0.000 ✓	
Sample Volume	L	59.610 ✓		Train A	Train B	59.533 ✓	
Standard Sample Volume	Vmstd, L	59.808		OK	OK	59.431	
Pre-Test Leak Check	L/min	0.000 @ 15" ✓		Agreement		0.000 @ 15" ✓	
Post-Test Leak Check	L/min	0.000 @ 7" ✓		OK		0.000 @ 7" ✓	
Elapsed time, min	DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp	
	°F	°F	Hg.	Hg.	°F	°F	
5	58 ✓	395 ✓	3 ✓	5 ✓	58 ✓	395 ✓	
10	58 ✓	396 ✓	3 ✓	5 ✓	58 ✓	396 ✓	
15	57 ✓	395 ✓	4 ✓	5 ✓	57 ✓	395 ✓	
20	58 ✓	398 ✓	5 ✓	5 ✓	58 ✓	398 ✓	
25	57 ✓	398 ✓	5 ✓	5 ✓	57 ✓	398 ✓	
30	58 ✓	395 ✓	5 ✓	5 ✓	58 ✓	395 ✓	
35	58 ✓	390 ✓	6 ✓	6 ✓	58 ✓	390 ✓	
40	58 ✓	389 ✓	5 ✓	5 ✓	58 ✓	389 ✓	
45	58 ✓	389 ✓	5 ✓	5 ✓	58 ✓	389 ✓	
50	59 ✓	385 ✓	6 ✓	6 ✓	60 ✓	385 ✓	
55	59 ✓	385 ✓	6 ✓	6 ✓	60 ✓	386 ✓	
60	59 ✓	385 ✓	6 ✓	6 ✓	59 ✓	385 ✓	
Average	58.1	391.7	4.9	5.3	58.3	391.8	

Notes: Stack Temp. 390/394 ✓

Handwritten signature

MERCURY FIELD DATA - EPA METHOD 30B

RUN 2

Client	New Indy ✓	Date	2/18/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 1 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train ✓		vs. Target Volume		B Train ✓		
			Train A	Train B			
Meter ID		AOV15A ✓			AOV15B ✓		
Meter Correction Factor		0.9989 ✓			0.9942 ✓		
Tube ID		OLC087106 ✓			OLC067175 ✓		
Start Time		12:36 ✓			12:36 ✓		
End Time		13:48 ✓			13:48 ✓		
Sample Time		1:12			1:12		
Final DGM Reading	L	59.501 ✓			59.475 ✓		
Initial DGM Reading	L	0.000 ✓			0.000 ✓		
Sample Volume	L	59.501 ✓			59.475 ✓		
Standard Sample Volume	Vmstd, L	59.365	OK	OK	58.750		
Pre-Test Leak Check	L/min	0.000 @ 15" ✓	Agreement		0.000 @ 15" ✓		
Post-Test Leak Check	L/min	0.000 @ 7" ✓	OK		0.000 @ 7" ✓		
Elapsed time, min		DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp
		°F	°F	Hg.	Hg.	°F	°F
5		60 ✓	291 ✓	7 ✓	6 ✓	61 ✓	291 ✓
10		60 ✓	300 ✓	7 ✓	6 ✓	63 ✓	300 ✓
15		60 ✓	300 ✓	5 ✓	5 ✓	63 ✓	300 ✓
20		60 ✓	299 ✓	6 ✓	6 ✓	63 ✓	299 ✓
25		61 ✓	300 ✓	6 ✓	6 ✓	64 ✓	300 ✓
30		61 ✓	305 ✓	7 ✓	7 ✓	64 ✓	305 ✓
35		61 ✓	305 ✓	7 ✓	7 ✓	64 ✓	305 ✓
40		61 ✓	306 ✓	7 ✓	7 ✓	63 ✓	306 ✓
45		62 ✓	307 ✓	7 ✓	7 ✓	65 ✓	307 ✓
50		62 ✓	307 ✓	7 ✓	7 ✓	65 ✓	307 ✓
55		62 ✓	307 ✓	7 ✓	7 ✓	65 ✓	308 ✓
60		62 ✓	307 ✓	7 ✓	7 ✓	65 ✓	308 ✓
Average		61.0	302.8	6.7	6.5	63.8	303.0

Notes: Stack Temp. 396/395 ✓

PM

MERCURY FIELD DATA - EPA METHOD 30B

RUN 3

Client	New Indy ✓	Date	2/18/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 1 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train ✓		vs. Target Volume		B Train ✓	
			Train A	Train B		
Meter ID		AOV15A ✓			AOV15B ✓	
Meter Correction Factor		0.9989 ✓			0.9942 ✓	
Tube ID		OL319580 ✓			OLC067215 ✓	
Start Time		14:32 ✓			14:32 ✓	
End Time		15:44 ✓			15:44 ✓	
Sample Time		1:12			1:12	
Final DGM Reading	L	59.318 ✓			59.777 ✓	
Initial DGM Reading	L	0.000 ✓			0.000 ✓	
Sample Volume	L	59.318 ✓			59.777 ✓	
Standard Sample Volume	Vmstd, L	59.078	OK	OK	59.104	
Pre-Test Leak Check	L/min	0.000 @ 15" ✓	Agreement		0.000 @ 15" ✓	
Post-Test Leak Check	L/min	0.000 @ 7" ✓	OK		0.000 @ 7" ✓	
Elapsed time, min	DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp
	°F	°F	Hg.	Hg.	°F	°F
5	61 ✓	305 ✓	6 ✓	5 ✓	61 ✓	305 ✓
10	61 ✓	305 ✓	6 ✓	5 ✓	61 ✓	305 ✓
15	61 ✓	304 ✓	7 ✓	5 ✓	61 ✓	304 ✓
20	61 ✓	305 ✓	7 ✓	6 ✓	62 ✓	305 ✓
25	62 ✓	305 ✓	7 ✓	6 ✓	62 ✓	305 ✓
30	62 ✓	306 ✓	7 ✓	6 ✓	62 ✓	306 ✓
35	62 ✓	308 ✓	7 ✓	7 ✓	62 ✓	308 ✓
40	62 ✓	307 ✓	7 ✓	7 ✓	65 ✓	307 ✓
45	62 ✓	308 ✓	7 ✓	7 ✓	65 ✓	308 ✓
50	63 ✓	308 ✓	7 ✓	7 ✓	66 ✓	308 ✓
55	63 ✓	308 ✓	7 ✓	7 ✓	66 ✓	308 ✓
60	63 ✓	307 ✓	7 ✓	7 ✓	66 ✓	307 ✓
Average	61.9	306.3	6.8	6.3	63.3	306.3

Notes: Stack. Temp 396 ✓

MERCURY FIELD DATA - EPA METHOD 30B

RUN 1

Client: <u>New Indy</u>	Date: <u>2/18/20</u>	
Plant-Facility: <u>Catawba</u>	Work Order#: <u>15703-001.003</u> <small>MPS 2-18</small> <u>15730.001.003</u>	
Location: <u>Catawba, SC</u>	Bp, in. Hg: <u>29.50</u>	
Source: <u>NO.1 CB</u>	Spike mass, ng in "B": <u>25</u>	
Train Operator: <u>BAVMS</u>	Target Volume, L: <u>60</u>	

A Train				B Train				
Meter ID		AOV 15A		Meter ID		AOV 15B		
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942		
Tube ID		OLC087155		Tube ID		OLC067137		
Start Time		10:18		Start Time		10:18		
End Time		11:25		End Time		11:25		
Sample Time		60		Sample Time		60		
Final DGM Reading	L	59.610		L		59.533		
Initial DGM Reading	L	0.000		L		0.000		
Sample Volume	L	59.610 ✓		L		59.533 ✓		
Standard Sample Volume	Vmstd, L	59.808		Vmstd, L		59.431 ✓		
Pre-Test Leak Check	L/min	0.000	@ VAC: Hg= 15			0.000	@ VAC: Hg= 15	
Post-Test Leak Check	L/min	0.000	@ VAC: Hg= 7			0.000	@ VAC: Hg= 7	
Elapsed time, min		DGM Temp	Probe Temp	Vacuum		DGM Temp	Probe Temp	Vacuum
		°F	°F	Hg.		°F	°F	Hg.
5		58	395	3	5	58	395	5
10		58	396	3	10	58	396	5
15		57	395	4	15	57	395	5
20		58	398	5	20	58	398	5
25		57	398	5	25	57	398	5
30		58	395	5	30	58	395	5
35		58	390	6	35	58	390	6
40		58	287 ^{MR1} 389	5	40	58	287 ^{MR1} 389	5
45		58	287 ^{MR1} 386	5	45	58	287 ^{MR1} 386	5
50		59	385	6	50	60	385	6
55		59	385	6	55	60	386	6
60		59	385	6	60	59	385	6
Average		58.1	391.7	6	Average	58.3	391.7	6
Moisture Data				Max Vac.				Max Vac.
Post-test Condenser Volume	mL							
Pre-test Condenser Volume	mL							
Collected Volume	mL							
Standard Volume	Vwstd, L							
BWS								

Notes: Stack Temp.- 390 / 394

MERCURY FIELD DATA - EPA METHOD 30B RUN 2

Client: <u>New Indy</u>	Date: <u>2/18/20</u> 3/12
Plant-Facility: <u>Catawba</u>	Work Order#: <u>15703.001.003</u>
Location: <u>Catawba, SC</u>	Bp, in. Hg: <u>29.50</u>
Source: <u>NO.1 CB</u>	Spike mass, ng in "B": <u>25</u>
Train Operator: <u>BAVMS</u>	Target Volume, L: <u>60</u>

A Train				B Train				
Meter ID		AOV 15A		Meter ID		AOV 15B		
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942		
Tube ID		066087106		Tube ID		066067175		
Start Time		12:36		Start Time		12:36		
End Time		13:48		End Time		13:48		
Sample Time		60		Sample Time		60		
Final DGM Reading	L	59.501		L		59.475		
Initial DGM Reading	L	0.000		L		0.000		
Sample Volume	L	59.501		L		59.475		
Standard Sample Volume	Vmstd, L	59.365		Vmstd, L		58.750		
Pre-Test Leak Check	L/min	0.000	@ VAC: Hg= 15			0.000	@ VAC: Hg= 15	
Post-Test Leak Check	L/min	0.000	@ VAC: Hg= 7			0.000	@ VAC: Hg= 7	
Elapsed time, min		DGM Temp	Probe Temp	Vacuum		DGM Temp	Probe Temp	Vacuum
		°F	°F	Hg.		°F	°F	Hg.
5		60	291	7	5	61	291	6
10		60	300	7	10	63	300	6
15		60	300	5	15	63	300	5
20		60	299	6	20	63	299	6
25		61	300	6	25	64	300	6
30		61	305	7	30	64	305	7
35		61	305	7	35	64	305	7
40		61	306	7	40	63	306	7
45		62	307	7	45	65	307	7
50		62	307	7	50	65	307	7
55		62	307	7	55	65	308	7
60		62	307	7	60	65	308	7
Average		61 ^{MA} 61.1	302.8	^{MA} 7.66	Average	63.75	307.875 ^{MA} 304.0	6.5
Moisture Data				Max Vac. 7				Max Vac. 7
Post-test Condenser Volume	mL							
Pre-test Condenser Volume	mL							
Collected Volume	mL							
Standard Volume	Vwstd, L							
BWS								

Notes: Stack Temp.- 396/395

MERCURY FIELD DATA - EPA METHOD 30B RUN 3

Client: <u>New Indy</u>	Date: <u>2/18/20</u> AP 3/12
Plant-Facility: <u>Catawba</u>	Work Order#: <u>15703.001.003</u>
Location: <u>Catawba, SC</u>	Bp, in. Hg: <u>29.50</u>
Source: <u>NO.1 CB</u>	Spike mass, ng in "B": <u>25</u>
Train Operator: <u>BA/MS</u>	Target Volume, L: <u>60</u>

A Train				B Train				
Meter ID		AOV 15A		Meter ID		AOV 15B		
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942		
Tube ID		02314580		Tube ID		022067215		
Start Time		14:32		Start Time		14:32		
End Time		15:44		End Time		15:44		
Sample Time		60		Sample Time		60		
Final DGM Reading	L	59.318		L		59.777		
Initial DGM Reading	L	0.000		L		0.000		
Sample Volume	L	59.318 AP 3/12		L		59.777 AP 3/12		
Standard Sample Volume	Vmstd, L	59.074		Vmstd, L		59.104		
Pre-Test Leak Check	L/min	0.000 @ VAC: Hg= 15				0.000 @ VAC: Hg= 15		
Post-Test Leak Check	L/min	0.000 @ VAC: Hg= 7				0.000 @ VAC: Hg= 7		
Elapsed time, min	DGM Temp		Probe Temp	Vacuum	DGM Temp		Probe Temp	Vacuum
	°F		°F	Hg.	°F		°F	Hg.
5	61	305	6	6	5	61	305	5
10	61	305	6	6	10	61	305	5
15	61	304	7	7	15	61	304	5
20	61	305	7	7	20	62	305	6
25	62	305	7	7	25	62	305	6
30	62	306	7	7	30	62	306	6
35	62	308	7	7	35	62	308	7
40	62	307	7	7	40	65	307	7
45	62	308	7	7	45	65	308	7
50	63	308	7	7	50	66	308	7
55	63	308	7	7	55	66	307	7
60	63	307	7	7	60	66	308	7
Average	61.92	306.33	6.8		Average	63.25	306.4233	6.25
Moisture Data			Max Vac. 7				Max Vac. 7	
Post-test Condenser Volume	mL							
Pre-test Condenser Volume	mL							
Collected Volume	mL							
Standard Volume	Vwstd, L							
BWS								

Notes: Stack Temp.- 396



APPENDIX D
FIELD DATA –
No. 2 COMBINATION BOILER



CONDITION 1



PARTICULATE MATTER AND HYDROGEN CHLORIDE

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB2

Condition 1

ISOKINETIC CALCULATIONS

Run Number		1	2	3	Mean
Date		2/19/20 ✓	2/19/20 ✓	2/19/20 ✓	---
Time Began		911 ✓	1253 ✓	1550 ✓	---
Time Ended		1029 ✓	1439 ✓	1656 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	60.0 ✓	60.0 ✓	60.0 ✓	60
Stack Diameter, in.	(Dia.)	120.0 ✓	120.0 ✓	120.0 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.45 ✓	29.45 ✓	29.45 ✓	29.45
Static Pressure, in. H2O	(Pg)	-0.69 ✓	-0.69 ✓	-0.69 ✓	-0.69
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.009 ✓	1.009 ✓	1.009 ✓	1.0090
Orifice Calibration Value	(Delta H@)	1.615 ✓	1.615 ✓	1.615 ✓	1.6150
Nozzle Diameter, in.	(Dn)	0.275 ✓	0.275 ✓	0.275 ✓	0.275
Meter Volume, ft ³	(Vm)	37.420 ✓	37.934 ✓	37.936 ✓	37.763
Meter Temperature, °F	(Tm)	59.5 ✓	60.8 ✓	59.5 ✓	59.9
Meter Temperature, °R	(Tm-R)	519.5	520.8	519.5	519.9
Meter Orifice Pressure, in. H2O	(Delta H)	1.278 ✓	1.317 ✓	1.303 ✓	1.299
Ave Sq Rt Orifice Press, (in. H2O) ^{1/2}	((Delta H) ^{1/2} avg)	1.112 ✓	1.129 ✓	1.122 ✓	1.121
Volume H2O Collected, mL	(Vlc)	213.7 ✓	176.7 ✓	156.6 ✓	182.3
CO2 Concentration, %	(CO2)	11.5 ✓	9.8 ✓	8.7 ✓	10.0
O2 Concentration, %	(O2)	9.2 ✓	10.7 ✓	11.7 ✓	10.5
Ave Sq Rt Velo Head, (in. H2O) ^{1/2}	((Delta P) ^{1/2} avg)	0.728 ✓	0.730 ✓	0.726 ✓	0.728
Stack Temperature, °F	(Ts)	402.1 ✓	408.2 ✓	407.5 ✓	405.9
Stack Temperature, °R	(Ts-R)	862.1	868.2	867.5	865.9
Particulate Collected, g	(Mn)	0.3643 ✓	0.6548 ✓	0.0791 ✓	0.3661
O2 F-Factor, dscf/MMBtu	(Fd)	9650 ✓	9649 ✓	9658 ✓	9652
CALCULATED DATA					
Nozzle Area, ft ²	(An)	4.12E-04	4.12E-04	4.12E-04	4.12E-04
Stack Area, ft ²	(As)	78.54 ✓	78.54 ✓	78.54 ✓	78.54
Stack Pressure, in. Hg	(Ps)	29.40	29.40 ✓	29.40	29.40
Meter Pressure, in. Hg	(Pm)	29.54	29.55 ✓	29.55	29.55
Standard Meter Volume, ft ³	(Vmstd)	37.877	38.306 ✓	38.402	38.195
Standard Water Volume, ft ³	(Vwstd)	10.059	8.317 ✓	7.371	8.582
Moisture Fraction (Measured)	(BWS)	0.210	0.178 ✓	0.161	0.183
Moisture Fraction (lower sat/meas)	(BWS)	0.210	0.178 ✓	0.161	0.183
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	30.21	30.00 ✓	29.86	30.02
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.65	27.86 ✓	27.95	27.82
Average Stack Gas Velocity, ft/sec	(Vs)	53.81	53.98 ✓	53.56	53.79
Stack Gas Flow, actual, ft ³ /min	(Qa)	253580	254386 ✓	252405	253457
Stack Gas Flow, Std, ft ³ /min	(Qs)	120536	124850 ✓	126586	123991
Isokinetic Sampling Rate, %	(%I)	99.7	97.4 ✓	96.3	97.8
Particulate Conc @ Std Cond, gr/ft ³	(Cs)	0.1484	0.2638 ✓	0.0318	0.1480
Particulate Emission, lb/hr	(PMR)	153.302	282.212 ✓	34.479	156.664
Particulate Emission Factor, lb/MMBtu	(Fd)	0.3655	0.7450 ✓	0.0996	0.4033
Calibration check	(Yqa)	1.0296	1.0360	1.0306	1.032
Percent difference from Y					2.29%

AB for SH ✓

New Indy, Catawba LLC
Catawba, SC

15730.001.003

CB2

Condition 1

HYDROGEN CHLORIDE EMISSION CALCULATIONS

Run Number	1	2	3	Average
Date	2/19/20 ✓	2/19/20 ✓	2/19/20 ✓	----
Time Began	0911 ✓	1253 ✓	1550 ✓	----
Time Ended	1029 ✓	1439 ✓	1656 ✓	----
Volumetric Flow Rate, dscfm	1.21E+5 ✓	1.25E+5 ✓	1.27E+5 ✓	1.24E+05
Sample Volume, ft ³	37.88 ✓	38.31 ✓	38.40 ✓	38.20
Corrected Sample Volume, L	1072.68	1084.83	1087.54	1081.68
% Oxygen	9.2 ✓	10.7 ✓	11.7 ✓	10.5
O2 F-factor, dscfm	9650 ✓	9649 ✓	9658 ✓	9652
	MMBtu			
Hydrogen Chloride				
Molecular Weight, µg/µg-mole	36.50	36.50	36.50	36.50
Mass of Sample, µg	544.00 ✓	161.00 ✓	531.00 ✓	412.00
Concentration, ppm	0.33 ✓	0.10	0.32	0.25
Emission Rate, lb/hr	0.23 ✓	0.07	0.23	0.18
Emission Factor, lb/MMBtu	5.44E-04 ✓	1.83E-04	6.67E-04	4.65E-04

AB for SH ✓

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy
W.O.#	15730.001.003
Project ID	Boiler MACT
Model/Source ID	No. 2 Combo Boiler
Source ID #	Stack
Run No. ID	
Test Method ID	M 5/26A
Filter Number	083703
Source Location	Stack
Sample Date	4/19/20
Baro. Press (in Hg)	** 29.45
Operator	RV

Stack Conditions	
Assumed	Actual
19%	203.3
% Moisture	10.4
Impinger Vol (ml)	11.5
Silica gel (g)	9.2
CO2, % by Vol	13.3
O2, % by Vol	6.8
Temperature (°F)	344
Meter Temp (°F)	63
Static Press (in H2O)	-6.4

Meter Box ID	ADK
Meter Box Y	1.009
Meter Box Del H	1.615
Probe ID / Length	PR5T 5FT
Probe Material	Boro
Pilot / Thermocouple ID	PA1A
Pilot Coefficient	0.34
Nozzle ID / Caliper ID	0.75 4-6
Avg Nozzle Dia (in)	0.75 / 0.75
Area of Stack (ft²)	78.54
Sample Time	60
Total Traverse Pts	24

K Factor	232.4	AK
Initial	0.005	
Final	0.003	
Leak Checks		
Sample Train (ft³)	8	yes / no
Leak Check @ (in Hg)		yes / no
Pilot good		yes / no
Orsat good		yes / no
Temp Check		Pre-Test Set
Meter Box Temp		Post-Test Set
Reference Temp		
Pass / Fail	yes / no	Pass / Fail
Temp Change Response ?		yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
B1	2.5	9:11	1.77	1.14	422.150	394	54	254	255	236	48	2.5	
2	5		1.81	1.8	424.0	394	54	253	256	231	48	2.5	
3	7.5		1.80	1.8	427.8	394	54	254	257	231	46	2.5	
4	10		1.74	1.7	424.7	394	54	253	258	233	45	2.5	
5	12.5		1.63	1.4	431.4	394	54	255	254	234	45	2	
6	15		1.55	1.2	432.8	394	60	254	260	235	46	2	
A1	17.5		1.45	1.0	434.3	394	60	257	261	233	46	2	
2	20		1.35	1.0	435.8	394	60	258	262	234	48	2	
3	22.5		1.31	0.80	437.0	460	54	257	263	236	47	1	
4	25		1.30	0.69	438.1	400	54	258	264	237	47	1	
5	27.5		1.30	0.69	439.4	400	54	259	267	239	46	1	* pause
6	30		1.24	0.72	440.4	402	60	260	265	232	46	1	4.384
1	32.5		1.74	1.9	442.4	403	54	261	266	232	45	3.5	sketch 9:52
2	35		1.80	1.9	444.3	407	60	260	266	234	45	3.5	
3	37.5		1.82	2.0	446.5	408	66	259	265	235	45	3.5	
4	40		1.75	1.8	448.2	403	61	260	264	237	46	3.5	
5	42.5		1.62	1.5	450.1	404	61	259	265	236	47	3.5	
6	45		1.54	1.3	451.6	403	61	258	266	239	48	3.5	
1	47.5		1.54	1.3	453.4	405	66	259	265	236	47	3.5	
2	50		1.46	1.1	454.8	406	54	260	266	237	47	3	
3	52.5		1.36	0.86	455.6	406	54	261	266	237	47	1.3	Calculated by:
4	55		1.32	0.76	456.8	407	54	262	267	234	48	1.5	ISO % =
5	57.5		1.30	0.72	458.3	408	60	263	268	262	49	1	MOIST % =
6	60	10:29	1.30	0.72	454.579	409	60	260	267	263	48	1	SCFM =
													SVOL =
													QC by: JW

15730.001.003
#1 & #2 CB
NESHAP BM
Compliance

Probe, Filter, Filter Exit TEMPS

Meth. 5, 5 P&P = 248°
Meth. 5B = 320°
Or Otherwise Specified by Method

Max VAC 3.5 ✓
Max Temp 48 ✓
Min/Max 255/268 ✓
Min/Max 256/263 ✓

Avg Ts 402.08 ✓
Avg Tm 59.5 ✓
Total Volume 37.42 ✓
Avg Delta H 1.278 ✓
Avg Sqrt Del H 1.112 ✓
Avg Sqrt Delta P 1.278 ✓
Avg Delta P V 1.5475 ✓

Comments: x10 ✓
x12 ✓

WESTON SOLUTIONS
Integrated Air Services
Stack Elevation

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy
W.O.#	15730.001.003
Project ID	Boiler MACT
Model/Source ID	No. 2 Combo Boiler
Source ID #	Stack
Run No. ID	2
Test Method ID	M 5/26A
Filter Number	08730837034
Source Location	Stack
Sample Date	2/19/20
Baro. Press (in Hg)	** 29.45
Operator	APL

Meter Box ID	AC18
Meter Box Y	1.009
Meter Box Del H	1.615
Probe ID / Length	PR 51 / 5.41
Probe Material	Boro
Pilot / Thermocouple ID	P274 / AC18
Pilot Coefficient	0.84
Nozzle ID / Caliper ID	273 / AL-6
Avg Nozzle Dia (in)	0.15175
Area of Stack (ft²)	78.54
Sample Time	60
Total Traverse Pts	24

Stack Conditions	Assumed	Actual
% Moisture	19%	
Impinger Vol (ml)		159.0
Silica gel (g)		17.1
CO2, % by Vol	13.3	9.8
O2, % by Vol	6.8	10.7
Temperature (°F)	398	
Meter Temp (°F)	63	
Static Press (in H2O)	-62	-64

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
B-1	0	12:53			964.250	405	61	235	254	252	54	3	
2	2.5		.78	1.9	966.3	405	61	237	255	253	52	3	
3	5		.41	1.9	968.1	406	61	258	253	254	50	3	
4	7.5		.79	1.0	970.0	407	62	257	253	256	47	3	
5	10		.75	1.8	973.1	406	62	258	254	261	47	2	
6	12.5		.63	1.5	973.8	406	62	259	256	265	47	1	
1	15		.58	1.4	975.4	406	62	254	256	264	48	1	
2	17.5		.56	1.3	977.0	405	61	254	255	264	48	1	
3	20		.45	1.1	978.5	406	61	258	257	261	48	1	
4	22.5		.37	.88	979.7	408	62	260	258	260	48	1	
5	25		.30	.72	980.9	408	61	262	258	262	50	1	
6	27.5		.30	.72	982.1	407	61	264	258	261	50	1	
1	30		.30	.72	983.0	407	62	263	259	260	51	1	
2	32.5		.40	1.9	985.2	408	62	266	260	261	52	3	
3	35		.42	2.0	987.3	408	62	265	260	259	52	3	
4	37.5		.78	1.8	984.0	408	61	264	263	260	53	3	
5	40		.74	1.8	991.0	407	60	264	262	261	54	3	Started Bldg
6	42.5		.62	1.5	992.6	408	60	265	261	260	53	2.5	14:17
1	45		.50	1.2	994.1	407	60	263	260	259	53	2.5	
2	47.5		.53	1.3	996.6	410	60	263	260	258	54	2.5	
3	50		.47	1.1	997.1	411	60	259	262	258	54	2.5	
4	52.5		.35	.84	994.3	414	59	254	264	251	53	1	Calculated by:
5	55		.34	.81	994.7	410	59	259	261	254	53	1	ISO % =
6	57.5		.37	.76	1000.8	414	59	260	262	252	53	1	MOIST % =
1	60	14:39	.32	.76	1002.184	415	59	261	263	254	53	1	SCFM =
2													SVOL =
3													QC by: <i>APL</i>

15730.001.003
#1 & #2 CB
NESHAP BM
Compliance

Probe, Filler, Filter, Exit TEMPS

Meth. 5, 5 P&P = 248*
Meth. 5B = 320*
Or Otherwise Specified by Method

Max VAC 3
Max Temp 54
Min/Max 255/266
Min/Max 253/264
Min/Max 952/265

Calculated by:
ISO % =
MOIST % =
SCFM =
SVOL =

WESTON SOLUTIONS
Integrated Air Services
Stack Elevation

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy	Stack Conditions	Assumed	Actual
W.O.#	15730.001.003	% Moisture	19%	
Project ID	Boiler MACT	Impinger Vol (ml)	147.1	
Mode/Source ID	No. 2 Combo Boiler	Silica gel (g)	4.5	
Source ID #	Stack	CO2, % by Vol	8.7	
Run No. ID	3	O2, % by Vol	6.8	
Test Method ID	M 5/26A	Temperature (°F)	348	
Filter Number	DB 3705	Meter Temp (°F)	63	
Source Location	Stack	Static Press (in H2O)	-0.64	
Sample Date	2/14/20	Ambient Temp (°F)	55	
Baro. Press (in Hg)	** 29.95	Total Traverse Pts	24	
Operator	HL			

Meter Box ID	A018	Meter Box Y	1.604
Meter Box Del H	1.615	Probe ID / Length	PR 5T
Probe Material	Boro	Pitot / Thermocouple ID	A014
Pitot Coefficient	0.84	Nozzle ID / Caliper ID	275
AVG Nozzle Dia (in)	275	Avg Nozzle Dia (in)	275
Area of Stack (ft²)	78.54	Sample Time	60
Total Traverse Pts	24		

K Factor	2.4	Initial	0.03	Final	0.00
Leak Checks		Sample Train (ft³)	8		8
Pitot good	yes / no	Leak Check @ (in Hg)	yes / no		yes / no
Orsat good	yes / no	Pitot good	yes / no		yes / no
Temp Check		Orsat good	yes / no		yes / no
Meter Box Temp		Pre-Test Set		Post-Test Set	
Reference Temp		Pass / Fail	yes / no	Pass / Fail	yes / no
Temp Change Response ?		Pass / Fail	yes / no	Pass / Fail	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
B1	0	15:50	.46	1.9	2,460	404	59	234	236	250	47	3.5	
2	2.5		.80	1.9	6.3	405	59	254	258	252	47	3.5	
3	7.5		.80	1.9	8.2	405	59	257	259	253	47	3.5	
4	10		.75	1.8	10.2	406	54	257	260	251	47	3.5	
5	12.5		.63	1.5	11.8	406	59	254	264	255	47	3.5	
6	15		.55	1.3	13.3	407	60	255	265	257	47	3	
A1	17.5		.53	1.3	15.0	409	60	237	267	259	49	3	
2	20		.47	1.1	16.4	410	60	258	265	260	48	2.5	
3	22.5		.36	.84	17.5	411	60	259	264	262	48	1	
4	25		.33	.79	19.0	410	60	266	265	261	48	1	
5	27.5		.30	.72	20.2	409	60	261	266	263	49	1	
6	30		.30	.72	21.6	412	54	261	264	264	49	1	
D1	32.5		.82	2.0	23.5	409	59	263	265	261	49	4.5	
2	35		.78	1.9	25.3	410	60	261	264	261	49	4	
3	37.5		.74	1.7	27.4	408	60	262	262	263	49	4	
4	40		.72	1.7	29.2	407	54	260	262	264	49	4	
5	42.5		.60	1.4	31.0	407	54	258	262	261	49	3.5	
6	45		.51	1.2	32.4	406	54	259	261	260	50	3.5	
G1	47.5		.55	1.3	33.6	406	54	257	260	261	50	3.5	
2	50		.45	1.1	35.4	407	60	256	260	262	50	2.5	
3	52.5		.35	.84	36.8	407	60	254	259	260	51	2	
4	55		.30	.72	37.9	406	60	252	257	257	51	2	
5	57.5	16:50	.30	.72	39.1	406	60	253	258	259	51	2	
6	60	17:06	.30	.72	40.336	407	54	251	257	260	51	2	
		HL											
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg. Tm	Min/Max	Min/Max	Min/Max	Max Temp	Max VAC	Min/Max
			.7254	1.3623	37.936	407.54	59.5	251/263	256/267	206/264	51	4.5	
			Avg Delta P	Avg Sqrt Del H	Comments:								
			.545	1.122	Sample I.D.:								

15730.001.003 #1 & #2 CB NESHAP BM Compliance

QC by: HL

Calculated by: _____

ISO % = _____

MOIST % = _____

SCFM = _____

SVOL = _____

Meth. 5, 5 P&P = 248°

Meth. 5B = 320°

Or Otherwise Specified by Method



Integrated Air Services

**At Stack Elevation

SAMPLE RECOVERY FIELD DATA

Method: M 5/26A

Client
Location/Plant

New Indy
Catawba, SC

W.O. #
Source & Location
Impingers 1 - 7

15730.001.003
No. 2 Combo Boiler

measured in Grams or ml (circle one)

Run No. 1 Sample Date 2-19-20 Recovery Date 2-19-20
 Sample I.D. CB2 Run1 HCL Analyst M. Carroll Filter Number DB3703

Impinger										
	1	2	3	4	5	6	7	Imp.Total	8 (grams)	Total
Contents	<u>.1NH₂SO₄</u>	<u>1NH₂SO₄</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>784.3</u>	<u>611.3</u>	<u>591.3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>857.4</u>	
Initial	<u>616.6</u>	<u>582.0</u>	<u>587.0</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>847.0</u>	
Gain	<u>167.7</u>	<u>31.3</u>	<u>4.3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>203.3</u>	<u>10.4</u>	<u>213.7</u>

Impinger Color clear Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Run No. 2 Sample Date 2-19-20 Recovery Date 2-19-20
 Sample I.D. CB2 Run 2 HCL Analyst M. Carroll Filter Number DB 3704

Impinger										
	1	2	3	4	5	6	7	Imp.Total	8 (grams)	Total
Contents	<u>.1NH₂SO₄</u>	<u>1NH₂SO₄</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>812.3</u>	<u>686.7</u>	<u>634.7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>911.9</u>	
Initial	<u>727.6</u>	<u>628.8</u>	<u>617.7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>894.8</u>	
Gain	<u>84.7</u>	<u>57.9</u>	<u>17</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>159.6</u>	<u>17.1</u>	<u>176.7</u>

Impinger Color clear Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Run No. _____ Sample Date _____ Recovery Date _____
 Sample I.D. _____ Analyst _____ Filter Number _____

Impinger										
	1	2	3	4	5	6	7	Imp.Total	8 (grams)	Total
Contents	<u>.1NH₂SO₄</u>	<u>1NH₂SO₄</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>732.8</u>	<u>609.4</u>	<u>590.7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>866.9</u>	
Initial	<u>617.9</u>	<u>581.2</u>	<u>586.7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>857.4</u>	
Gain	<u>114.9</u>	<u>28.2</u>	<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>147.1</u>	<u>9.5</u>	<u>156.6</u>

Impinger Color _____ Labeled? ✓
 Silica Gel Condition _____ Sealed? _____

Check COC for Sample ID's of Media Blanks "X" or "/" out unused Impinger blocks

Acetone Lot # _____	HPLC H ₂ O Lot # <u>S2D2-11</u>	Bal. Id. # <u>EJ-3</u>
Hexane Lot # _____	Purge Regulator # _____	N ₂ Cyl. # <u>9512-80</u>
For Meth. 202 Recovery		<u>.1NH₂SO₄</u>



Am *Jan*

Sample and Velocity Traverse Point Data Sheet - Method 1

Client New Indy Catawba, LLC Operator P.E.G.
 Location/Plant Resolute Forest Products Date 3/8/17
 Source No. 2 C.B. W.O. Number 03917 008 035 15730.001.003

Duct Type Circular Rectangular Duct Indicate appropriate type
 Traverse Type Particulate Traverse Velocity Traverse

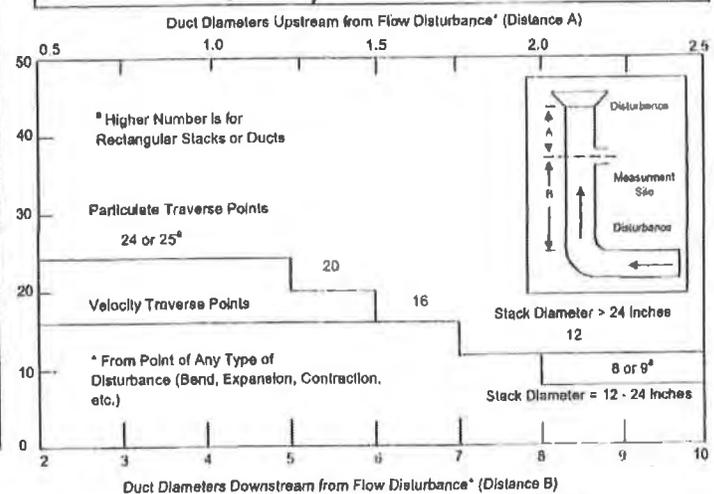
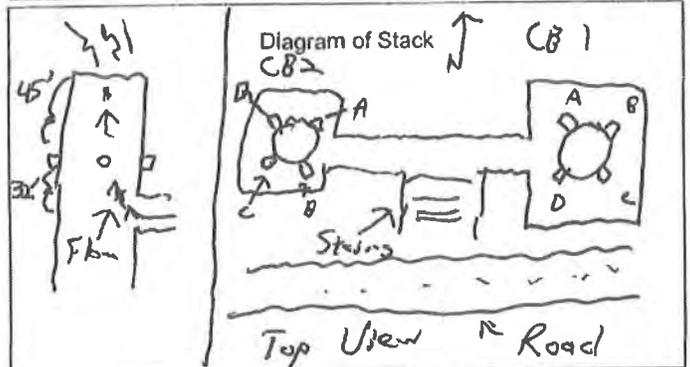
TS
2-14-20
m12

Distance from far wall to outside of port (in.) = C	129.00
Port Depth (in.) = D	9.00
Depth of Duct, diameter (in.) = C-D	120.0
Area of Duct (ft ²)	78.54
Total Traverse Points	24
Total Traverse Points per Port	6

Flow Disturbances	
Upstream - A (ft)	45.0
Downstream - B (ft)	32.0
Upstream - A (duct diameters)	4.5
Downstream - B (duct diameters)	3.2

Rectangular Ducts Only
 Width of Duct, rectangular duct only (in.)
 Total Ports (rectangular duct only)

Traverse Point Locations			
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	2.1	2.52	16.5
2	6.7	8.04	17.0
3	11.8	14.16	23.0
4	17.7	21.24	30.0
5	25.0	30.00	39.0
6	35.6	42.72	51.5
7			
8			
9			
10			
11			
12			



Equivalent Diameter = $(2 * L * W) / (L + W)$

Traverse Point Location Percent of Stack - Circular												
Number of Traverse Points												
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3			75		29.6		19.4		14.6		11.8	
4				93.3		70.4		32.3		22.6		17.7
5					85.4		67.7		34.2		25	
6						95.6		80.6		65.8		35.6
7							89.5		77.4		64.4	
8								96.8		85.4		75
9									91.8		82.3	
10										97.4		88.2
11											93.3	
12												97.9

Traverse Point Location Percent of Stack - Rectangular																						
Number of Traverse Points																						
	1	2	3	4	5	6	7	8	9	10	11	12										
1		25.0		16.7		12.5		10.0		8.3		7.1		6.3		5.6		5.0		4.5		4.2
2		75.0		50.0		37.5		30.0		25.0		21.4		18.8		16.7		15.0		13.6		12.5
3			83.3		62.5		50.0		41.7		35.7		31.3		27.8		25.0		22.7		20.8	
4				87.5		70.0		58.3		50.0		43.8		38.9		35.0		31.8		29.2		
5					90.0		75.0		64.3		56.3		50.0		45.0		40.9		37.5			
6						91.7		78.6		68.8		61.1		55.0		50.0		45.8				
7							92.9		81.3		72.2		65.0		59.1		54.2					
8								93.8		83.3		75.0		68.2		63.5						
9									94.4		85.0		77.3		70.8							
10										95.0		86.4		79.2								
11											95.5		87.5									
12												95.8										

Rectangular Stack Points & Matrix

- 9 - 3 x 3
- 12 - 4 x 3
- 16 - 4 x 4
- 20 - 5 x 4
- 25 - 5 x 5
- 30 - 6 x 5
- 36 - 6 x 6
- 42 - 7 x 6
- 49 - 7 x 7





CARBON MONOXIDE

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB2
Condition 1

EMISSION CALCULATIONS

	Run 1	Run 2	Run 3	Mean
Date	2/19/20 ✓	2/19/20 ✓	2/19/20 ✓	---
Time Began	911 ✓	1253 ✓	1550 ✓	---
Time Ended	1030 ✓	1430 ✓	1650 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	1.21E+05 ✓	1.25E+05 ✓	1.27E+05 ✓	1.24E+05
BWS	0.210 ✓	0.178 ✓	0.161 ✓	0.183
% Oxygen	9.2 ✓	10.7 ✓	11.7 ✓	10.5
Oxygen Reference Concentration, %	3.0	3.0	3.0	3.0
O2 F-Factor, dscf/MMBtu	9650 ✓	9649 ✓	9658 ✓	9652
<hr/>				
Carbon Monoxide	MW= 28.00			
Concentration, ppm	847.0 ✓	629.0 ✓	736.0 ✓	737.3
Concentration, ppm @3%O2	1295.8 ✓	1103.8	1432.0	1277.2
Emission Rate, lb/hr	445.06 ✓	342.33	406.14	397.84
Emission Factor, lb/MMBtu	1.0588 ✓	0.9019	1.1711	1.0439

AB + SH ✓

RUN SUMMARY

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	CO EPA 10 ppm
-----------------------	-------------------------------	--------------------------------	---------------------

Time: 09:11 to 10:30

Run Averages

9.2 11.2 864

Pre-run Bias at 08:41

Zero Bias	-0.1	0.3	4
Span Bias	10.0	9.7	1297
Span Gas	10.0	10.0	1274

Post-run Bias at 10:34

Zero Bias	-0.1	0.3	2
Span Bias	10.0	9.9	1300
Span Gas	10.0	10.0	1274

Run averages corrected for the average of the pre-run and post-run bias

9.2 ✓ 11.5 ✓ 847 ✓

JA

RUN SUMMARY

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Method	O ₂	CO ₂	CO
Conc. Units	EPA 3A	EPA 3A	EPA 10
	%	%	ppm

Time: 12:53 to 14:30

Run Averages

10.8 9.7 640

Pre-run Bias at 10:34

Zero Bias	-0.1	0.3	2
Span Bias	10.0	9.9	1300
Span Gas	10.0	10.0	1274

Post-run Bias at 14:33

Zero Bias	0.3	0.3	3
Span Bias	10.2	9.9	1285
Span Gas	10.0	10.0	1274

Run averages corrected for the average of the pre-run and post-run bias

10.7 ✓ 9.8 ✓ 629 ✓

✓

RUN SUMMARY

Number 3

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **19 Feb 2020**

Calibration 1

Method	O ₂	CO ₂	CO
Conc. Units	EPA 3A	EPA 3A	EPA 10
	%	%	ppm

Time: 15:50 to 16:50

Run Averages

11.9 8.6 744

Pre-run Bias at 14:33

Zero Bias	0.3	0.3	3
Span Bias	10.2	9.9	1285
Span Gas	10.0	10.0	1274

Post-run Bias at 14:33

Zero Bias	0.3	0.3	3
Span Bias	10.2	9.9	1285
Span Gas	10.0	10.0	1274

Run averages corrected for the average of the pre-run and post-run bias

11.7 ✓ 8.7 ✓ 736 ✓

JS

RUN DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
09:12	4301	10.3	3257	10.1	1288	382
09:13	4115	9.8	3351	10.4	1257	372
09:14	4098	9.8	3423	10.6	1291	383
09:15	4035	9.6	3445	10.7	1343	398
09:16	3711	8.8	3605	11.2	1265	375
09:17	3784	9.0	3691	11.5	1355	402
09:18	3996	9.5	3596	11.2	1253	371
09:19	4035	9.6	3516	10.9	1429	424
09:20	3879	9.2	3555	11.1	1653	491
09:21	3551	8.3	3721	11.6	1896	564
09:22	3334	7.8	3914	12.2	2985	892
09:23	3378	7.9	3981	12.5	3265	976
09:24	3555	8.4	3934	12.3	2370	707
09:25	3962	9.4	3745	11.7	1946	580
09:26	4521	10.9	3394	10.5	2674	798
09:27	4752	11.5	3115	9.6	2936	877
09:28	4754	11.5	3000	9.3	2894	864
09:29	4809	11.6	2943	9.1	2916	871
09:30	4760	11.5	2904	8.9	3074	918
09:31	3964	9.4	3177	9.8	3634	1087
09:32	3181	7.4	3747	11.7	5412	1621
09:33	2978	6.8	4086	12.8	8833	2649
09:34	3005	6.9	4195	13.2	9603	2880
09:35	3088	7.1	4188	13.1	7878	2362
09:36	3062	7.1	4193	13.2	8338	2500
09:37	3068	7.1	4212	13.2	8812	2643
09:38	3000	6.9	4229	13.3	9412	2823
run paused because bark screw went down						
09:52	4677	11.3	2989	9.2	2408	718
09:53	4224	10.1	3123	9.7	1794	534
09:54	3582	8.4	3521	11.0	1687	502
09:55	3431	8.0	3816	11.9	2125	633
09:56	3594	8.5	3831	12.0	1410	418
09:57	3746	8.9	3752	11.7	1432	425
09:58	3751	8.9	3714	11.6	1854	552
09:59	3553	8.3	3775	11.8	1887	562
10:00	3305	7.7	3942	12.3	3344	1000
10:01	3259	7.6	4040	12.7	4465	1336
10:02	3443	8.1	3992	12.5	3257	973
10:03	3660	8.6	3881	12.1	3373	1008
10:04	4098	9.8	3663	11.4	2343	699

RUN DATA

Number 1

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
10:05	4562	11.0	3318	10.3	2616	781
10:06	4757	11.5	3085	9.5	3000	896
10:07	4702	11.4	3000	9.3	3325	994
10:08	4540	10.9	3047	9.4	4223	1264
10:09	4698	11.4	3025	9.3	3869	1157
10:10	4250	10.2	3091	9.6	3848	1151
10:11	3328	7.8	3623	11.3	3658	1094
10:12	3188	7.4	3988	12.5	3561	1065
10:13	3341	7.8	4009	12.6	2021	602
10:14	3670	8.7	3898	12.2	1356	402
10:15	3531	8.3	3818	11.9	1225	363
10:16	3391	7.9	3947	12.4	1522	452
10:17	3480	8.2	3922	12.3	1475	438
10:18	3590	8.4	3895	12.2	1372	407
10:19	4052	9.7	3687	11.5	1390	412
10:20	4568	11.0	3318	10.3	1719	511
10:21	4231	10.1	3267	10.1	1884	561
10:22	4045	9.6	3410	10.6	1446	429
10:23	4088	9.8	3451	10.7	1516	450
10:24	4168	10.0	3424	10.6	1867	556
10:25	4455	10.7	3256	10.1	3410	1019
10:26	4213	10.1	3272	10.1	1875	558
10:27	3868	9.2	3485	10.8	1283	380
10:28	3895	9.2	3565	11.1	1658	493
10:29	3864	9.2	3580	11.2	1814	540
10:30	3820	9.0	3637	11.3	1624	483
Avg	3868	9.2	3594	11.2	2893	864

RUN DATA

Number 2

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**

Operator: **T. Simpkins**

Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
12:54	4190	10.0	3323	10.3	2000	596
12:55	4276	10.2	3321	10.3	1893	564
12:56	4370	10.5	3274	10.2	1905	567
12:57	4388	10.5	3239	10.0	1897	565
12:58	4330	10.4	3254	10.1	1924	573
12:59	4400	10.6	3231	10.0	1866	555
13:00	4421	10.6	3215	10.0	1838	547
13:01	4615	11.1	3125	9.7	1862	554
13:02	4648	11.2	3044	9.4	1992	593
13:03	4496	10.8	3072	9.5	1878	559
13:04	4456	10.7	3140	9.7	1727	514
13:05	4590	11.1	3093	9.6	1805	537
13:06	4563	11.0	3071	9.5	1880	560
13:07	4471	10.8	3099	9.6	1801	536
13:08	4412	10.6	3163	9.8	1648	490
13:09	4372	10.5	3201	9.9	1665	495
13:10	4398	10.6	3210	9.9	1787	532
13:11	4398	10.6	3200	9.9	1707	508
13:12	4497	10.8	3172	9.8	1756	522
13:13	4689	11.3	3072	9.5	1842	548
13:14	4798	11.6	2954	9.1	2123	633
13:15	4681	11.3	2974	9.2	1762	524
13:16	4674	11.3	2986	9.2	1718	511
13:17	4596	11.1	3036	9.4	1625	483
13:18	4688	11.3	3017	9.3	1553	461
13:19	4665	11.3	3010	9.3	1548	460
13:20	4601	11.1	3040	9.4	1572	467
13:21	4521	10.9	3095	9.6	1592	473
13:22	4580	11.0	3096	9.6	1674	498
13:23	4539	10.9	3101	9.6	1863	555
13:24	4477	10.8	3128	9.7	1951	581
13:25	4392	10.6	3190	9.9	1801	536
13:26	4295	10.3	3251	10.1	1614	480
13:27	4247	10.2	3311	10.3	1734	516
13:28	4253	10.2	3324	10.3	1657	493
13:29	4185	10.0	3347	10.4	1917	571
13:30	4073	9.7	3429	10.7	1951	581
13:31	4118	9.8	3435	10.7	1789	532
13:32	4060	9.7	3460	10.8	1776	528
13:33	3990	9.5	3509	10.9	1993	594
13:34	4060	9.7	3507	10.9	1982	590

RUN DATA

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
13:35	4184	10.0	3425	10.6	1817	541
13:36	4422	10.6	3120	9.7	1538	457
13:37	4380	10.5	3193	9.9	1589	472
13:38	4212	10.1	3282	10.2	2324	693
13:39	4085	9.7	3391	10.5	3334	997
13:40	4134	9.9	3403	10.6	3090	923
13:41	3990	9.5	3472	10.8	3651	1092
13:42	3658	8.6	3698	11.5	5343	1600
Paused for Lost Bark Feed						
14:18	4103	9.8	3405	10.6	1685	501
14:19	4205	10.1	3390	10.5	1905	567
14:20	4686	11.3	3191	9.9	1995	594
14:21	4978	12.1	2902	8.9	2744	819
14:22	5032	12.2	2790	8.6	2954	882
14:23	4943	12.0	2762	8.5	3014	900
14:24	4865	11.8	2825	8.7	3323	993
14:25	5094	12.4	2747	8.4	3875	1159
14:26	5207	12.7	2624	8.0	4272	1278
14:27	5115	12.4	2631	8.1	3941	1179
14:28	5128	12.5	2623	8.0	3110	929
14:29	4882	11.8	2726	8.4	2051	611
14:30	4826	11.7	2827	8.7	1668	496
Avg	4477	10.8	3148	9.7	2147	640

RUN DATA

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
15:51	4595	11.1	2989	9.2	1925	573
15:52	4479	10.8	3085	9.5	2148	640
15:53	4293	10.3	3202	9.9	2506	748
15:54	4184	10.0	3309	10.3	3020	902
15:55	4219	10.1	3340	10.4	2820	842
15:56	4090	9.8	3385	10.5	2182	650
15:57	3943	9.4	3506	10.9	1997	595
15:58	3971	9.4	3541	11.0	1591	473
15:59	3908	9.3	3565	11.1	1571	467
16:00	3730	8.8	3655	11.4	1823	543
16:01	3642	8.6	3764	11.8	2098	625
16:02	3816	9.0	3723	11.6	1921	572
16:03	4042	9.6	3576	11.1	1647	490
16:04	4356	10.5	3394	10.5	1754	522
16:05	5247	12.8	2933	9.0	2575	769
16:06	5739	14.1	2422	7.4	2940	878
16:07	5322	13.0	2419	7.4	3030	905
16:08	4779	11.6	2734	8.4	2062	614
16:09	4868	11.8	2851	8.8	1765	525
16:10	5187	12.6	2695	8.3	1941	578
16:11	5480	13.4	2506	7.6	2217	661
16:12	5572	13.6	2342	7.1	2825	844
16:13	5523	13.5	2336	7.1	2753	822
16:14	5565	13.6	2315	7.0	2767	826
16:15	5498	13.5	2313	7.0	2993	894
16:16	5377	13.1	2380	7.2	2868	857
16:17	5391	13.2	2400	7.3	2644	789
16:18	5436	13.3	2381	7.2	2708	809
16:19	5488	13.4	2334	7.1	2961	885
16:20	5524	13.5	2319	7.0	2916	871
16:21	5502	13.5	2307	7.0	3062	915
16:22	5616	13.8	2271	6.9	3497	1046
16:23	5673	13.9	2206	6.7	4093	1225
16:24	5646	13.8	2209	6.7	4006	1199
16:25	5576	13.7	2231	6.7	3950	1182
16:26	5333	13.0	2351	7.1	3539	1058
16:27	5082	12.4	2545	7.8	2664	795
16:28	5006	12.2	2653	8.1	2540	758
16:29	5065	12.3	2674	8.2	2730	815
16:30	5010	12.2	2678	8.2	3139	938
16:31	4767	11.5	2814	8.7	2757	823

RUN DATA

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
16:32	4601	11.1	2958	9.1	2177	649
16:33	4601	11.1	3032	9.4	1855	552
16:34	4713	11.4	2977	9.2	1999	595
16:35	4580	11.0	3019	9.3	1925	573
16:36	4439	10.7	3106	9.6	1748	520
16:37	4376	10.5	3194	9.9	1494	444
16:38	4262	10.2	3261	10.1	1503	446
16:39	4391	10.5	3253	10.1	1480	439
16:40	4493	10.8	3168	9.8	1543	458
16:41	4650	11.2	3093	9.6	1748	520
16:42	5215	12.7	2796	8.6	2579	770
16:43	5394	13.2	2527	7.7	3235	967
16:44	5273	12.9	2520	7.7	3045	910
16:45	5265	12.8	2546	7.8	2758	824
16:46	5350	13.1	2491	7.6	2809	839
16:47	5549	13.6	2392	7.3	2890	863
16:48	5566	13.6	2292	6.9	3043	909
16:49	5197	12.7	2458	7.5	2656	793
16:50	5098	12.4	2593	7.9	2166	646
Avg	4909	11.9	2805	8.6	2493	744

BIAS
Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 08:05

O₂
Method: EPA 3A
Span Conc. 20.0 %

*Response
Time
(5-10)*

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	371	0.0	0.0	0.0 ✓	Pass 100
Span	10.0	4196	10.0	0.0	0.0 ✓	Pass 200

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	209	0.1	0.0	0.0 ✓	Pass 100
Span	9.8	3166	9.8	0.0	0.0 ✓	Pass 100

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	27	3	3	0.1 ✓	Pass 80
Span	1273	4265	1276	3	0.1 ✓	Pass 80

✓

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 08:41

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	348	-0.1	-0.1	-0.5 ✓	Pass
Span	10.0	4168	10.0	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.0	348	-0.1	-0.1	-0.5 ✓	Pass
Span	10.0	4168	10.0	0.0	0.0 ✓	Pass

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	266	0.3	0.2	1.0 ✓	Pass
Span	9.8	3147	9.7	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	266	0.3	0.2	1.0 ✓	Pass
Span	9.8	3147	9.7	-0.1	-0.5 ✓	Pass

*Bias No. 1

✓

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 08:41

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	30	4	4	0.2 ✓	Pass
Span	1273	4333	1297	24	1.0 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	%		
Zero	3	30	4	1	0.0 ✓	Pass
Span	1276	4333	1297	21	0.8 ✓	Pass

*Bias No. 1

Jo

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 10:34

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	355	-0.1	-0.1	-0.5 ✓	Pass
Span	10.0	4193	10.0	0.0	0.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	-0.1	355	-0.1	0.0 ✓	Pass	
Span	10.0	4193	10.0	0.0 ✓	Pass	

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	246	0.3	0.2	1.0 ✓	Pass
Span	9.8	3211	9.9	0.1	0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.3	246	0.3	0.0 ✓	Pass	
Span	9.7	3211	9.9	0.2 ✓	Pass	

*Bias No. 2

✓ per

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 10:34

CO

Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	25	2	2	0.1 ✓	Pass
Span	1273	4342	1300	27	1.1 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	%		
Zero	4	25	-2	-0.1 ✓	Pass	
Span	1297	4342	1300	3	0.1 ✓	Pass

*Bias No. 2

✓

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 14:33

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	505	0.3	0.3	1.5 ✓	Pass
Span	10.0	4269	10.2	0.2	1.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	-0.1	505	0.3	0.4	2.0 ✓	Pass
Span	10.0	4269	10.2	0.2	1.0 ✓	Pass

*Bias No. 3

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	269	0.3	0.2	1.0 ✓	Pass
Span	9.8	3186	9.9	0.1	0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.3	269	0.3	0.0	0.0 ✓	Pass
Span	9.9	3186	9.9	0.0	0.0 ✓	Pass

*Bias No. 3

sa

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 14:33

CO

Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	% ✓	
Zero	0	28	3	3	0.1 ✓	Pass
Span	1273	4293	1285	12	0.5 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	% ✓		
Zero	2	28	3	1	0.0 ✓	Pass
Span	1300	4293	1285	-15	-0.6 ✓	Pass

*Bias No. 3

✓aw

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: ~~14:33~~ **1653**

TS

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	505	0.3	0.3	1.5 ✓	Pass
Span	10.0	4269	10.2	0.2	1.0 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	%	mv	%	%	
Zero	0.3	505	0.3	0.0 ✓	Pass
Span	10.2	4269	10.2	0.0 ✓	Pass

*Bias No. 4

CO₂

Method: EPA 3A
Span Conc. 20.2 %

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	269	0.3	0.2	1.0 ✓	Pass
Span	9.8	3186	9.9	0.1	0.5 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	%	mv	%	%	
Zero	0.3	269	0.3	0.0 ✓	Pass
Span	9.9	3186	9.9	0.0 ✓	Pass

*Bias No. 4

JS

BIAS AND CALIBRATION DRIFT

Number 5

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: ~~14:33~~ **1653**

CO

Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	28	3	3	0.1 ✓	Pass
Span	1273	4293	1285	12	0.5 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	ppm	mv	ppm	%	
Zero	3	28	3	0.0 ✓	Pass
Span	1285	4293	1285	0.0 ✓	Pass

*Bias No. 4

sm

CALIBRATION DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Start Time: 07:44

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	372
10.0	SG9152789BAL	4190
20.0	CC252945	7982

Curve Coefficients

Slope	Intercept	Corr. Coeff.
380.7	376	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	205
10.0	SG9152789BAL	3150
20.2	CC252945	6395

Curve Coefficients

Slope	Intercept	Corr. Coeff.
306.2	165	0.9998 ✓

Jo

CALIBRATION DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Start Time: 07:44

CO

Method: EPA 10

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero	-	19
1274	CC177948	4254
2517	CC426172	8395

Curve Coefficients

Slope	Intercept	Corr. Coeff.
3.328	17	>0.9999 ✓

JS

CALIBRATION ERROR DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 07:44

O₂

Method: EPA 3A
Span Conc. 20.0 %

Slope 380.7 Intercept 375.7

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	372	0.0	0.0	0.0 ✓	Pass
10.0	4190	10.0	0.0	0.0 ✓	Pass
20.0	7982	20.0	0.0	0.0 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 306.2 Intercept 164.8

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	205	0.1	0.1	0.5 ✓	Pass
10.0	3150	9.8	-0.2	-1.0 ✓	Pass
20.2	6395	20.3	0.1	0.5 ✓	Pass

CO

Method: EPA 10
Span Conc. 2517 ppm

Slope 3.328 Intercept 17

Standard ppm	Response mv	Result ppm	Difference ppm	Error %	Status
Zero	19	0	0	0.0 ✓	Pass
1274	4254	1273	-1	-0.0 ✓	Pass
2517	8395	2517	0	0.0 ✓	Pass

METHODS AND ANALYZERS

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

File: C:\Data\New Indy- Catawba\Boiler MACT CEM Files Feb 2020\CB2 Feb 19 2020.cem
Program Version: 2.1, built 19 May 2017 **File Version:** 2.03
Computer: TR271DT1 **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN:E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	20.0

Channel 2

Analyte	CO ₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN: E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 3

Analyte	CO
Method	EPA 10, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T300M S/N 365
Full-Scale Output, mv	10000
Analyzer Range, ppm	3000
Span Concentration, ppm	2517



MERCURY

New Indy
Catawba
Catawba, SC

15730.001.003
CB 2

CB 2
Mercury lb/Tbtu

Run No.	Dry Concentration ug/m3	Dry CO2 %	Emission Factor Total lb/MMBtu	Emission Factor Total lb/Tbtu
1	0.513 ✓	11.5 ✓	5.31E-07	0.531
2	0.357 ✓	9.8 ✓	4.34E-07	0.434
3	0.290 ✓	8.7 ✓	3.97E-07	0.397
	0.387	10.0	4.54E-07	0.454

Run 1 CO2 F-Factor 1911 ✓
Run 2 CO2 F-Factor 1911 ✓
Run 3 CO2 F-Factor 1910 ✓

ASV ✓

Method 30B
Sample Calculation Summary

Run ID	Sample Volume Vmstd L	Tube ID	Sample Mass		Breakthrough		Total Mass		Concentration		Replicates		Field Recovery Data	
			Front ng	Back ng	%	OK?	Hg ng	Dry µg/m3	% RD	OK?	Mass ng	Recovery %	Recovery OK?	
1A	59.976 ✓	OLC087371	30.0 ✓	0.7 ✓	2.33	OK	30.70	0.512						
1B	59.791 ✓	OLC067060	55.0 ✓	0.7 ✓	1.27	OK	30.70	0.513					25	100.38
2A	60.533 ✓	OL319745	21.0 ✓	1.1 ✓	5.24	OK	22.10	0.365						
2B	61.306 ✓	OL521136	44.0 ✓	2.4 ✓	5.45	OK	21.40	0.349					25	96.07
3A	59.992 ✓	OL435957	17.0 ✓	0.6 ✓	3.53	OK	17.60	0.293						
3B	59.028 ✓	OLC067142	41.0 ✓	0.9 ✓	2.20	OK	16.90	0.286					25	98.33
3								0.290			1.22	OK		98.3
Average														OK

Handwritten mark

MERCURY FIELD DATA - EPA METHOD 30B

RUN 1

Client	New Indy ✓	Date	2/19/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 2 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train ✓		vs. Target Volume		B Train ✓	
			Train A	Train B		
Meter ID		AOV15A ✓			AOV1B ✓	
Meter Correction Factor		0.9989 ✓			0.9942 ✓	
Tube ID		OLC087371 ✓			OLC067060 ✓	
Start Time		9:11 ✓			9:11 ✓	
End Time		10:29 ✓			10:29 ✓	
Sample Time		1:18			1:18	
Final DGM Reading	L	59.421 ✓			59.537 ✓	
Initial DGM Reading	L	0.000 ✓			0.000 ✓	
Sample Volume	L	59.421 ✓			59.537 ✓	
Standard Sample Volume	Vmstd, L	59.976	OK	OK	59.791	
Pre-Test Leak Check	L/min	0.000 @ 15" ✓	Agreement		0.000 @ 15" ✓	
Post-Test Leak Check	L/min	0.000 @ 6" ✓	OK		0.000 @ 6" ✓	
Elapsed time, min	DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp
	°F	°F	Hg.	Hg.	°F	°F
5	53 ✓	307 ✓	4 ✓	4 ✓	54 ✓	307 ✓
10	54 ✓	306 ✓	5 ✓	5 ✓	54 ✓	306 ✓
15	54 ✓	305 ✓	5 ✓	5 ✓	54 ✓	305 ✓
20	54 ✓	305 ✓	5 ✓	5 ✓	54 ✓	305 ✓
25	55 ✓	305 ✓	5 ✓	5 ✓	54 ✓	305 ✓
30	55 ✓	300 ✓	6 ✓	6 ✓	55 ✓	300 ✓
35	55 ✓	301 ✓	6 ✓	6 ✓	55 ✓	301 ✓
40	56 ✓	305 ✓	6 ✓	6 ✓	56 ✓	305 ✓
45	56 ✓	305 ✓	6 ✓	6 ✓	56 ✓	305 ✓
50	56 ✓	304 ✓	6 ✓	6 ✓	56 ✓	304 ✓
55	56 ✓	305 ✓	6 ✓	6 ✓	57 ✓	305 ✓
60	56 ✓	305 ✓	6 ✓	6 ✓	57 ✓	305 ✓
Average	55.0	304.4	5.5	5.5	55.2	304.4

Notes: Stack Temp. 398/409 ✓
Run was paused from 0938-0952 due to lost bark screw. ✓

AD ✓

MERCURY FIELD DATA - EPA METHOD 30B

RUN 2

Client	New Indy ✓	Date	2/19/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 2 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

		A Train ✓				B Train ✓	
Meter ID		AOV15A ✓				AOV1B ✓	
Meter Correction Factor		0.9989 ✓				0.9942 ✓	
Tube ID		OL319745 ✓				OL521136 ✓	
Start Time		12:53				12:53 ✓	
End Time		14:53				14:53 ✓	
Sample Time		2:00				2:00	
Final DGM Reading	L	60.080 ✓				61.401 ✓	
Initial DGM Reading	L	0.000 ✓		vs. Target Volume		0.000 ✓	
Sample Volume	L	60.080 ✓		Train A Train B		61.401 ✓	
Standard Sample Volume	Vmstd, L	60.533		OK OK		61.306	
Pre-Test Leak Check	L/min	0.000 @ 15" ✓		Agreement		0.000 @ 15" ✓	
Post-Test Leak Check	L/min	0.000 @ 6" ✓		OK		0.000 @ 6" ✓	
Elapsed time, min		DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp
		°F	°F	Hg.	Hg.	°F	°F
5		55 ✓	296 ✓	4 ✓	5 ✓	57 ✓	296 ✓
10		55 ✓	300 ✓	4 ✓	5 ✓	57 ✓	300 ✓
15		56 ✓	305 ✓	4 ✓	5 ✓	58 ✓	305 ✓
20		56 ✓	306 ✓	4 ✓	5 ✓	58 ✓	306 ✓
25		56 ✓	307 ✓	5 ✓	6 ✓	59 ✓	307 ✓
30		56 ✓	307 ✓	5 ✓	6 ✓	59 ✓	307 ✓
35		56 ✓	308 ✓	5 ✓	6 ✓	59 ✓	308 ✓
40		57 ✓	307 ✓	5 ✓	6 ✓	60 ✓	307 ✓
45		56 ✓	300 ✓	6 ✓	6 ✓	57 ✓	300 ✓
50		56 ✓	300 ✓	5 ✓	5 ✓	58 ✓	300 ✓
55		56 ✓	302 ✓	5 ✓	5 ✓	58 ✓	302 ✓
60		56 ✓	302 ✓	5 ✓	5 ✓	58 ✓	302 ✓
Average		55.9	303.3	4.8	5.4	58.2	303.3

Notes: Stack Temp. 405/407
Run was paused from 1342-1417 due to lost bark screws, which resulted in bark build-up on the bed of the boiler.

an

MERCURY FIELD DATA - EPA METHOD 30B

RUN 3

Client	New Indy ✓	Date	2/19/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 2 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train ✓					B Train ✓	
Meter ID		AOV15A ✓				AOV1B ✓	
Meter Correction Factor		0.9989 ✓				0.9942 ✓	
Tube ID		OL435957 ✓				OLC067142 ✓	
Start Time		15:50 ✓				15:50 ✓	
End Time		16:56 ✓				16:56 ✓	
Sample Time		1:06				1:06	
Final DGM Reading	L	59.466 ✓				59.243 ✓	
Initial DGM Reading	L	0.000 ✓		vs. Target Volume		0.000 ✓	
Sample Volume	L	59.466 ✓		Train A	Train B	59.243 ✓	
Standard Sample Volume	Vmstd, L	59.992		OK	OK	59.028	
Pre-Test Leak Check	L/min	0.000 @ 15" ✓		Agreement		0.000 @ 15" ✓	
Post-Test Leak Check	L/min	0.000 @ 7" ✓		OK		0.000 @ 7" ✓	
Elapsed time, min	DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp	
	°F	°F	Hg.	Hg.	°F	°F	
5	55 ✓	308 ✓	4 ✓	4 ✓	59 ✓	308 ✓	
10	55 ✓	308 ✓	4 ✓	4 ✓	59 ✓	308 ✓	
15	55 ✓	308 ✓	5 ✓	5 ✓	59 ✓	308 ✓	
20	55 ✓	307 ✓	5 ✓	5 ✓	59 ✓	307 ✓	
25	55 ✓	308 ✓	5 ✓	5 ✓	59 ✓	308 ✓	
30	55 ✓	309 ✓	5 ✓	5 ✓	59 ✓	309 ✓	
35	55 ✓	309 ✓	5 ✓	5 ✓	59 ✓	309 ✓	
40	55 ✓	308 ✓	5 ✓	5 ✓	59 ✓	308 ✓	
45	55 ✓	307 ✓	5 ✓	5 ✓	59 ✓	307 ✓	
50	56 ✓	305 ✓	5 ✓	5 ✓	60 ✓	305 ✓	
55	56 ✓	306 ✓	5 ✓	5 ✓	60 ✓	306 ✓	
60	56 ✓	306 ✓	5 ✓	5 ✓	60 ✓	306 ✓	
Average	55.3	307.4	4.8	4.8	59.3	307.4	

Notes: Stack Temp. 399/401 ✓



MERCURY FIELD DATA - EPA METHOD 30B RUN 1

Client: New Indy
 Plant-Facility: Catawba
 Location: Catawba, SC
 Source: NO. 1 CB
 Train Operator: BAVMS

Date: 2/18/20
 Work Order#: 15703.001.003
 Bp, in. Hg: 29.50
 Spike mass, ng in "B": 25
 Target Volume, L: 60

A Train				B Train				
Meter ID		AOV 15A		Meter ID		AOV 15B		
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942		
Tube ID		01C087371		Tube ID		01C08760		
Start Time		9:11		Start Time		9:11		
End Time		10:29		End Time		10:29		
Sample Time		60		Sample Time		60		
Final DGM Reading	L	59.421		L		59.537		
Initial DGM Reading	L	0.000		L		0.000		
Sample Volume	L	59.421		L		59.537		
Standard Sample Volume	Vmstd, L	59.874		Vmstd, L		59.689		
Pre-Test Leak Check	L/min	0.000	@ VAC: Hg= 15"			0.000	@ VAC: Hg= 15"	
Post-Test Leak Check	L/min	0.000	@ VAC: Hg= 6			0.000	@ VAC: Hg= 6	
Elapsed time, min		DGM Temp	Probe Temp	Vacuum		DGM Temp	Probe Temp	Vacuum
		°F	°F	Hg.		°F	°F	Hg.
5		53	307	4	5	54	307	4
10		54	306	5	10	54	306	5
15		54	305	5	15	54	305	5
20		54	305	5	20	54	305	5
25		55	305	5	25	54	305	5
30		55	300	6	30	55	300	6
35		55	301	6	35	55	301	6
40		56	305	6	40	56	305	6
45		56	305	6	45	56	305	6
50		56	304	6	50	56	304	6
55		56	305	6	55	57	305	6
60		56	305	6	60	57	305	6
Average		55	304.416	5.5	Average	55.166	304.416	5.5
Moisture Data				Max Vac. 6				Max Vac. 6
Post-test Condenser Volume	mL							
Pre-test Condenser Volume	mL							
Collected Volume	mL							
Standard Volume	Vwstd, L							
BWS								

Notes: Stack Temp.- 398 / 409

MERCURY FIELD DATA - EPA METHOD 30B RUN 2

Client:	New Indy	Date:	2/18/20 ⁹ ₃₁₂
Plant-Facility:	Catawba	Work Order#:	15708.001.003
Location:	Catawba, SC	Bp, in. Hg:	29.50
Source:	NO.2 CB	Spike mass, ng in "B":	25
Train Operator:	BAVMS	Target Volume, L:	60

A Train				B Train					
Meter ID		AOV 15A		Meter ID		AOV 15B			
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942			
Tube ID		0L319745		Tube ID		0L521136			
Start Time		12:53		Start Time		12:53			
End Time				End Time					
Sample Time		60		Sample Time		60			
Final DGM Reading	L	60.080		L		61.401			
Initial DGM Reading	L	0.000		L		0.000			
Sample Volume	L	60.080		L		61.401			
Standard Sample Volume	Vmstd, L	60.431		Vmstd, L		61.202			
Pre-Test Leak Check	L/min	0.000 @ VAC: Hg= 15				0.000 @ VAC: Hg= 15			
Post-Test Leak Check	L/min	0.000 @ VAC: Hg= 6				0.000 @ VAC: Hg= 6			
Elapsed time, min	DGM Temp		Probe Temp	Vacuum	DGM Temp		Probe Temp	Vacuum	
	°F		°F	Hg.	°F		°F	Hg.	
5	55		296	4	5	57		296	5
10	55		300	4	10	57		300	5
15	56		305	4	15	58		305	5
20	56		306	4	20	58		306	5
25	56		307	5	25	59		307	6
30	56		307	5	30	59		307	6
35	56		308	5	35	59		308	6
40	57		307	5	40	60		307	6
45	56		300	6	45	57		300	6
50	56		300	5	50	58		300	5
55	56		302	5	55	58		302	5
60	56		302	5	60	58		302	5
Average	55.916		303.33	4.75	Average	58.166		303.33	5.416
Moisture Data				Max Vac. 6				Max Vac. 6	
Post-test Condenser Volume	mL								
Pre-test Condenser Volume	mL								
Collected Volume	mL								
Standard Volume	Vwstd, L								
BWS									

Notes: Stack Temp. - 405/407

MERCURY FIELD DATA - EPA METHOD 30B

RUN 3

Client: <u>New Indy</u>	Date: <u>2/18/20</u> 9 15 16
Plant-Facility: <u>Catawba</u>	Work Order#: <u>15703.001.003</u>
Location: <u>Catawba, SC</u>	Bp, in. Hg: <u>29.50</u>
Source: <u>NO.2 CB</u>	Spike mass, ng in "B": <u>25</u>
Train Operator: <u>BA/MS</u>	Target Volume, L: <u>60</u>

A Train				B Train				
Meter ID		AOV 15A		Meter ID		AOV 15B		
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942		
Tube ID		OL435957		Tube ID		OLC067142		
Start Time		15:50		Start Time		15:50		
End Time		16:00 16:50		End Time		16:00 16:50		
Sample Time		60		Sample Time		60		
Final DGM Reading	L	59.466		L		59.243		
Initial DGM Reading	L	0.000		L		0.000		
Sample Volume	L	59.466		L		59.243		
Standard Sample Volume	Vmstd, L	57.890		Vmstd, L		58.918		
Pre-Test Leak Check	L/min	0.000 @ VAC: Hg= 15"				0.000 @ VAC: Hg= 15"		
Post-Test Leak Check	L/min	2.000 @ VAC: Hg= 7"				2.000 @ VAC: Hg= 7"		
Elapsed time, min		DGM Temp	Probe Temp	Vacuum		DGM Temp	Probe Temp	Vacuum
		°F	°F	Hg.		°F	°F	Hg.
	5	55	308	4	5	59	308	4
	10	55	308	4	10	59	308	4
	15	55	308	5	15	59	308	5
	20	55	307	5	20	59	307	5
	25	55	308	5	25	59	308	5
	30	55	309	5	30	59	309	5
	35	55	309	5	35	59	309	5
	40	55	308	5	40	59	308	5
	45	55	307	5	45	59	307	5
	50	56	305	5	50	60	305	5
	55	56	306	5	55	60	306	5
	60	56	306	5	60	60	306	5
Average		55.25	307.416	4.83	Average	59.25	307.416	4.83
Moisture Data				Max Vac. 5				Max Vac. 5
Post-test Condenser Volume	mL							
Pre-test Condenser Volume	mL							
Collected Volume	mL							
Standard Volume	Vwstd, L							
BWS								

Notes: Stack Temp. - 392 / 401



CONDITION 2



PARTICULATE MATTER AND HYDROGEN CHLORIDE

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB2

Condition 2

ISOKINETIC CALCULATIONS

Run Number		4	5	6	Mean
Date		2/20/20 ✓	2/20/20 ✓	2/20/20 ✓	---
Time Began		1033 ✓	1240 ✓	1422 ✓	---
Time Ended		1141 ✓	1347 ✓	1530 ✓	---
INPUT DATA					
Sampling Time, min	(Theta)	60.0 ✓	60.0 ✓	60.0 ✓	60
Stack Diameter, in.	(Dia.)	120.0 ✓	120.0 ✓	120.0 ✓	120.00
Barometric Pressure, in. Hg	(Pb)	29.58 ✓	29.58 ✓	29.58 ✓	29.58
Static Pressure, in. H2O	(Pg)	-0.90 ✓	-0.90 ✓	-0.69 ✓	-0.83
Pitot Tube Coefficient	(Cp)	0.84 ✓	0.84 ✓	0.84 ✓	0.84
Meter Correction Factor	(Y)	1.009 ✓	1.009 ✓	1.009 ✓	1.0090
Orifice Calibration Value	(Delta H@)	1.615 ✓	1.615 ✓	1.615 ✓	1.6150
Nozzle Diameter, in.	(Dn)	0.265 ✓	0.265 ✓	0.265 ✓	0.265
Meter Volume, ft^3	(Vm)	38.328 ✓	38.593 ✓	38.473 ✓	38.465
Meter Temperature, °F	(Tm)	46.3 ✓	49.1 ✓	48.3 ✓	47.9
Meter Temperature, °R	(Tm-R)	506.3	509.1	508.3	507.9
Meter Orifice Pressure, in. H2O	(Delta H)	1.333 ✓	1.326 ✓	1.325 ✓	1.328
Ave Sq Rt Orifice Press, (in. H2O)^½	((Delta H)½)avg	1.144 ✓	1.141 ✓	1.141 ✓	1.142
Volume H2O Collected, mL	(Vlc)	172.6 ✓	172.6 ✓	177.6 ✓	174.3
CO2 Concentration, %	(CO2)	10.1 ✓	10.1 ✓	10.3 ✓	10.2
O2 Concentration, %	(O2)	9.8 ✓	9.8 ✓	9.5 ✓	9.7
Ave Sq Rt Velo Head, (in. H2O)^½	((Delta P)½)avg	0.810 ✓	0.808 ✓	0.809 ✓	0.809
Stack Temperature, °F	(Ts)	423.3 ✓	427.2 ✓	418.9 ✓	423.1
Stack Temperature, °R	(Ts-R)	883.3	887.2	878.9	883.1
Particulate Collected, g	(Mn)	0.2602 ✓	0.1065 ✓	0.1262 ✓	0.1643
O2 F-Factor, dscf/MMBtu	(Fd)	9522	9500	9483	9502
CALCULATED DATA					
Nozzle Area, ft²	(An)	3.83E-04	3.83E-04	3.83E-04 ✓	3.83E-04
Stack Area, ft²	(As)	78.54	78.54	78.54 ✓	78.54
Stack Pressure, in. Hg	(Ps)	29.51	29.51	29.53 ✓	29.52
Meter Pressure, in. Hg	(Pm)	29.68	29.68	29.68 ✓	29.68
Standard Meter Volume, ft³	(Vmstd)	39.992	40.040	39.982 ✓	40.005
Standard Water Volume, ft³	(Vwstd)	8.124	8.124	8.360 ✓	8.203
Moisture Fraction (Measured)	(BWS)	0.169	0.169	0.173 ✓	0.170
Moisture Fraction (lower sat/meas)	(BWS)	0.169	0.169	0.173 ✓	0.170
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	30.01	30.01	30.03 ✓	30.01
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.98	27.98	27.95 ✓	27.97
Average Stack Gas Velocity, ft/sec	(Vs)	60.17	60.15	59.92 ✓	60.08
Stack Gas Flow, actual, ft³/min	(Qa)	283556	283438	282351 ✓	283115
Stack Gas Flow, Std, ft³/min	(Qs)	138913	138269	138399 ✓	138527
Isokinetic Sampling Rate, %	(%I)	98.4	99.0	98.7 ✓	98.7
Particulate Conc @ Std Cond, gr/ft³	(Cs)	0.1004	0.0410	0.0487 ✓	0.0634
Particulate Emission, lb/hr	(PMR)	119.514	48.632	57.767 ✓	75.304
Particulate Emission Factor, lb/MMBtu	(Fd)	0.2571	0.1049	0.1210 ✓	0.1610
Calibration check	(Yqa)	1.0219	1.0151	1.0171 ✓	1.018
Percent difference from Y					0.90%

SH

✓ 0.9

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB2

Condition 2

HYDROGEN CHLORIDE EMISSION CALCULATIONS

Run Number	4	5	6	Average
Date	2/20/20 ✓	2/20/20 ✓	2/20/20 ✓	-----
Time Began	1033 ✓	1240 ✓	1422 ✓	-----
Time Ended	1141 ✓	1347 ✓	1530 ✓	-----
Volumetric Flow Rate, dscfm	1.39E+5 ✓	1.38E+5 ✓	1.38E+5 ✓	1.39E+05 ✓
Sample Volume, ft ³	39.99 ✓	40.04 ✓	39.98 ✓	40.00 ✓
Corrected Sample Volume, L	1132.57	1133.93	1132.29	1132.93
% Oxygen	9.8 ✓	9.8 ✓	9.5 ✓	9.7 ✓
O2 F-factor, dscfm	MMBtu 9522 ✓	9500 ✓	9483 ✓	9502 ✓
Hydrogen Chloride				
Molecular Weight, µg/µg-mole	36.50	36.50	36.50	36.50
Mass of Sample, µg	5370.00 ✓	6440.00 ✓	8710.00 ✓	6840.00 ✓
Concentration, ppm	3.12 ✓	3.74	5.07	3.98
Emission Rate, lb/hr	2.47 ✓	2.94	3.98	3.13
Emission Factor, lb/MMBtu	5.29E-03 ✓	6.33E-03	8.33E-03	6.65E-03

SH

ISOKINETIC FIELD DATA SHEET

Method:

M 5/26A

Page 1 of 1

Client	New Indy
W.O.#	15730.001.003
Project ID	Boiler MACT
Model/Source ID	No. 2 Combo Boiler
Source ID #	Stack
Run No. ID	TS 4
Test Method ID	M 5/26A
Filter Number	1063106
Source Location	Stack
Sample Date	2/20/20
Baro. Press (in Hg)	** 29.54
Operator	AL

Stack Conditions	
Assumed	Actual
19%	
% Moisture	
Impinger Vol (ml)	
Silica gel (g)	
CO2, % by Vol	10.1
O2, % by Vol	9.8
Temperature (°F)	
Meter Temp (°F)	
Static Press (in H2O)	-62
Ambient Temp (°F)	45

Meter Box ID	A018
Meter Box Y	1.004
Meter Box Del H	1.615
Probe ID / Length	PR 5T 5 ft
Probe Material	Boro
Pitot / Thermocouple ID	PR 74 A018
Pitot Coefficient	0.84
Nozzle ID / Caliper ID	265 A1-6
Avg Nozzle Dia (in)	265 1.265
Area of Stack (ft²)	78.54
Sample Time	60
Total Traverse Pts	24

K Factor	2.0
Initial	0.00
Final	0.00
Leak Checks	
Sample Train (ft³)	8
Leak Check @ (in Hg)	yes / no
Pitot good	yes / no
Orsat good	yes / no
Temp Check	
Meter Box Temp	
Reference Temp	
Pass/Fail	yes / no
Temp Change Response?	

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
1	0	10:33	1.80	1.7	41.500	420	46	254	256	251	40	2	
2	2.5		1.89	1.8	43.3	422	46	256	257	252	40	2	
3	7.5		1.40	1.8	47.0	423	46	257	258	253	38	2	
4	10		1.92	1.8	48.4	423	46	258	258	253	38	2	
5	12.5		1.80	1.6	50.7	423	46	255	254	254	38	2	
6	15		1.65	1.3	52.3	424	46	255	260	253	38	1.5	
1	17.5		1.71	1.4	53.9	425	46	256	261	255	37	1.5	
2	20		1.62	1.2	55.4	425	46	257	260	258	34	1.5	
3	22.5		1.54	1.1	56.5	425	47	258	261	263	40	1.5	
4	25		1.45	1.0	58.2	424	47	259	263	267	40	1	
5	27.5		1.44	0.9	59.5	424	47	260	262	268	40	1	
6	30		1.40	0.86	60.7	423	47	261	262	266	44	1	
1	32.5		1.86	1.7	62.3	423	47	260	263	269	44	3	
2	35		1.83	1.67	64.4	421	47	262	264	256	44	3	
3	37.5		1.86	1.7	66.1	421	46	261	264	257	45	3	
4	40		1.85	1.7	68.0	422	46	260	263	259	45	3	
5	42.5		1.76	1.5	69.7	422	46	258	261	266	45	3	
6	45		1.64	1.3	71.4	422	46	257	262	261	46	3	
1	47.5		1.70	1.4	73.2	422	46	258	261	260	47	3	
2	50		1.62	1.2	74.6	425	45	257	260	254	47	3	
3	52.5		1.50	1.0	75.4	425	45	255	260	257	47	2	
4	55		1.47	0.94	77.3	425	46	253	261	255	48	2	
5	57.5		1.42	0.84	78.6	425	47	254	260	256	48	1	
6	60	11:41	1.42	0.84	79.8	425	47	255	262	257	48	1	
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Im	Min/Max	Min/Max	Min/Max	Max Temp	Max VAC	
			1.8102	1.833	38.328	423.24	46.25	253-262	256-264	251-268	48	3	
			Avg Delta P	Avg Sqrt Del H	Comments:								
			1.6683	1.144	Sample I.D.:								



Probe, Filler, Filter Exit TEMPS
 Meth. 5, 5 P&P = 248°
 Meth. 5B = 320°
 Or Otherwise Specified by Method

15730.001.003
 #1 & #2 CB
 NESHAP BM
 Compliance

QC by: [Signature]

Calculated by:
 ISO % =
 MOIST % =
 SCFM =
 SVOL =

ISOKINETIC FIELD DATA SHEET

Method: **M 5/26A**

Page 1 of 1

Client	New Indy	Meter Box ID	AG-8
W.O.#	15730.001.003	Meter Box Y	1.009
Project ID	Boiler MACT	Meter Box Del H	1.615
Mode/Source ID	No. 2 Combo Boiler	Probe ID / Length	385T 5ft
Source ID #	Stack	Probe Material	Boro
Run No. ID	AP 2.5	Pitot / Thermocouple ID	1374 A-018
Test Method ID	M 5/26A	Pitot Coefficient	0.84
Filter Number	883167	Nozzle ID / Caliper ID	275 AC-6
Source Location	Stack	Avg Nozzle Dia (in)	2.51 2.54 2.52
Sample Date	2/20/20	Area of Stack (ft²)	78.54
Baro. Press (in Hg)	** 29.53	Sample Time	60
Operator	AP	Total Traverse Pts	24

Stack Conditions	
Assumed	Actual
19%	
13.3	
6.8	
50	
-62	

% Moisture	
Impinging Vol (ml)	
Silica gel (g)	
CO2, % by Vol	
O2, % by Vol	
Temperature (°F)	
Meter Temp (°F)	
Static Press (in H2O)	
Ambient Temp (°F)	45

Stack Conditions	Assumed	Actual
19%		
13.3		
6.8		
50		
-62		

TRAVERSE POINT No.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM EXIT TEMP (°F)	PROBE TEMP 248°-273°	FILTER BOX TEMP 248°-273°	FILTER EXIT TEMP 248°-273°	IMPINGER EXIT TEMP <68 (°F)	SAMPLE TRAIN VAC (in. Hg)	COMMENTS
0	0	12:40			80.106								
1	2.5		.45	1.7	82.6	423	47	232	258	251	50	3	
2	5		.87	1.7	84.1	424	47	253	259	251	50	3	
3	7.5		.92	1.8	85.8	425	47	254	260	253	50	3.5	
4	10		.92	1.8	87.7	426	47	255	262	255	50	3.5	
5	12.5		.80	1.6	89.9	427	47	254	261	256	50	3	
6	15		.64	1.3	91.0	427	47	255	262	258	50	3	
A1	17.5		.69	1.4	92.4	427	48	257	263	259	44	3	
2	20		.66	1.2	94.2	428	48	256	265	261	44	3	
3	22.5		.55	1.1	93.6	428	49	257	264	263	44	3	
4	25		.49	.88	96.9	428	49	258	265	266	44	1.5	
5	27.5		.44	.88	99.0	428	49	259	269	267	50	1.5	
6	30		.40	.80	99.6	429	50	260	269	266	50	1.5	
D1	32.5		.83	1.7	101.3	429	50	260	265	261	50	3.5	
2	35		.86	1.7	103.1	429	50	261	266	260	50	3.5	
3	37.5		.85	1.7	105.1	428	50	260	266	261	50	3.5	
4	40		.85	1.7	106.8	428	50	262	265	262	50	3.5	
5	42.5		.75	1.5	108.6	428	50	261	264	263	50	3.5	
6	45		.60	1.2	110.2	428	50	260	263	261	49	3	
C1	47.5		.66	1.3	111.7	427	51	260	261	255	47	3	
2	50		.61	1.2	113.3	428	51	261	257	256	47	3	
3	52.5		.50	1.0	114.7	427	51	262	256	257	47	3.5	
4	55		.47	.94	116.1	427	51	260	255	258	47	3.5	
5	57.5		.43	.86	117.3	427	51	262	254	259	47	2	
6	60	13:47	.43	.86	118.643	427	51	261	255	258	47	2	
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Min/Max	Max Temp.	Max VAC	
			1.605	1.3256	38.593	427.2	49.12	254/262	254/264	251/267	50	3.5	
			Avg Delta P	Avg Sqrt Del H	Comments:			Probe, Filter, Exit TEMPS	Meth. 5, 5 P&P = 248*	Meth. 5B = 320*	Or Otherwise Specified by Method		
			1.605	1.141									

Leak Checks

Sample Train (in Hg) 0.03 Initial 0.03 Final 0.04

Leak Check @ (in Hg) 10

Pitot good yes / no

Orsat good yes / no

Temp Check

Meter Box Temp 65

Reference Temp 65

Pass/Fail (+/- 2°) Pass / Fail

Temp Change Response? yes / no

Calculated by: _____

ISO % = _____

MOIST % = _____

SCFM = _____

SVOL = _____

QC by: _____



15730.001.003
#1 & #2 CB
NESTAP BM
Compliance

SAMPLE RECOVERY FIELD DATA

Method: M 5/26A

Client
Location/Plant

New Indy
Catawba, SC

W.O. #
Source & Location
Impingers 1 - 7

15730.001.003
No. 2 Combo Boiler
measured in Grams or ml (circle one)

Run No. 4 Sample Date 2-20-20 Recovery Date 2-20-20
 Sample I.D. Run 4 CB2 HCL Analyst M. Carroll Filter Number DB3706

	Impinger							Imp. Total	8 (grams)	Total
	1	2	3	4	5	6	7			
Contents	<u>1NH₂SO₄</u>	<u>1NH₂SO₄</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>802.0</u>	<u>689.5</u>	<u>639.5</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>934.1</u>	
Initial	<u>726.8</u>	<u>628.9</u>	<u>617.8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>919.0</u>	<u>919.0</u>
Gain	<u>75.2</u>	<u>60.6</u>	<u>21.7</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>157.5</u>	<u>15.1</u>	<u>172.6</u>

Impinger Color ✓ clear ✓ Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Run No. 5 Sample Date 2-20-20 Recovery Date 2-20-20
 Sample I.D. CB2 Run 5 HCL Analyst M. Carroll Filter Number DB3707

	Impinger							Imp. Total	8 (grams)	Total
	1	2	3	4	5	6	7			
Contents	<u>1NH₂SO₄</u>	<u>1NH₂SO₄</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>727.5</u>	<u>622.2</u>	<u>593.0</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>880.3</u>	
Initial	<u>614.4</u>	<u>580.5</u>	<u>586.5</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>869.0</u>	
Gain	<u>113.1</u>	<u>41.7</u>	<u>6.5</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>161.3</u>	<u>11.3</u>	<u>172.6</u>

Impinger Color ✓ clear ✓ Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Run No. 6 Sample Date 2-20-20 Recovery Date 2-20-20
 Sample I.D. CB2 Run 6 HCL Analyst M. Carroll Filter Number DB3708

	Impinger							Imp. Total	8 (grams)	Total
	1	2	3	4	5	6	7			
Contents	<u>1NH₂SO₄</u>	<u>1NH₂SO₄</u>	<u>Empty</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>Silica Gel</u>	
Final	<u>808.3</u>	<u>692.0</u>	<u>638.2</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		<u>948.9</u>	
Initial	<u>728.6</u>	<u>629.3</u>	<u>617.8</u>	<u>✓</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>✓</u>	<u>734.1</u>	
Gain	<u>79.7</u>	<u>62.7</u>	<u>20.4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>142.8</u>	<u>14.8</u>	<u>177.6</u>

Impinger Color clear ✓ Labeled? ✓
 Silica Gel Condition good Sealed? ✓

Check COC for Sample ID's of Media Blanks "X" or "/" out unused Impinger blocks

Acetone Lot # _____	HPLC H ₂ O Lot # <u>5292-11</u>	Bal. Id. # <u>EJ3</u>
Hexane Lot # _____	Purge Regulator # _____	N ₂ Cyl. # <u>9512-80</u>

For Meth. 202 Recovery 1NH₂SO₄





CARBON MONOXIDE

New Indy, Catawba LLC
Catawba, SC

15730.001.003
CB2
Condition 2

EMISSION CALCULATIONS

	Run 4	Run 5	Run 6	Mean
Date	2/20/20 ✓	2/20/20 ✓	2/20/20 ✓	---
Time Began	1033 ✓	1240 ✓	1422 ✓	---
Time Ended	1137 ✓	1340 ✓	1522 ✓	---
Volumetric Flow Rate, (Qs), DSCFM	1.39E+05 ✓	1.38E+05 ✓	1.38E+05 ✓	1.39E+05
BWS	0.169 ✓	0.169 ✓	0.173 ✓	0.170
% Oxygen	9.8 ✓	9.8 ✓	9.5 ✓	9.7
Oxygen Reference Concentration, %	3.0 ✓	3.0 ✓	3.0 ✓	3.0
O2 F-Factor, dscf/MMBtu	9522 ✓	9500 ✓	9483 ✓	9502
<hr/>				
Carbon Monoxide	MW= 28.00			
Concentration, ppm	328.0 ✓	307.0 ✓	230.0 ✓	288.3
Concentration, ppm @3%O2	528.9 ✓	495.1 ✓	361.1 ✓	461.7
Emission Rate, lb/hr	198.62 ✓	185.04 ✓	138.76 ✓	174.14
Emission Factor, lb/MMBtu	0.4265 ✓	0.3982 ✓	0.2900 ✓	0.3716

am

RUN SUMMARY

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Calibration 1

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	CO EPA 10 ppm
-----------------------	-------------------------------	--------------------------------	---------------------

Time: 10:33 to 11:37

Run Averages

9.9 10.0 322

Pre-run Bias at 08:34

Zero Bias	0.4	0.4	-8
Span Bias	19.8	19.7	1280
Span Gas	20.0	20.2	1274

Post-run Bias at 11:40

Zero Bias	0.1	0.1	-9
Span Bias	19.9	20.0	1269
Span Gas	20.0	20.2	1274

Run averages corrected for the average of the pre-run and post-run bias

9.8 ✓ 10.1 ✓ 328 ✓

J. Simpkins

RUN SUMMARY

Number 5

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**

Operator: **T. Simpkins**

Date: **20 Feb 2020**

Calibration 1

Method	O ₂	CO ₂	CO
Conc. Units	EPA 3A	EPA 3A	EPA 10
	%	%	ppm

Time: 12:40 to 13:40

Run Averages

9.8 10.0 302

Pre-run Bias at 11:40

Zero Bias	0.1	0.1	-9
Span Bias	19.9	20.0	1269
Span Gas	20.0	20.2	1274

Post-run Bias at 13:41

Zero Bias	0.1	0.1	-5
Span Bias	19.8	20.0	1277
Span Gas	20.0	20.2	1274

Run averages corrected for the average of the pre-run and post-run bias

9.8 ✓ 10.1 ✓ 307 ✓

JW

RUN SUMMARY

Number 6

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **20 Feb 2020**

Calibration 1

Method Conc. Units	O ₂ EPA 3A %	CO ₂ EPA 3A %	CO EPA 10 ppm
-----------------------	-------------------------------	--------------------------------	---------------------

Time: 14:22 to 15:22

Run Averages

9.5	10.2	227
-----	------	-----

Pre-run Bias at 13:41

Zero Bias	0.1	0.1	-5
Span Bias	19.8	20.0	1277
Span Gas	20.0	20.2	1274

Post-run Bias at 15:23

Zero Bias	0.0	0.1	-4
Span Bias	19.8	20.0	1277
Span Gas	20.0	20.2	1274

Run averages corrected for the average of the pre-run and post-run bias

9.5 ✓	10.3 ✓	230 ✓
-------	--------	-------

JW

RUN DATA

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
10:34	3491	8.7	3765	11.0	1973	576
10:35	3523	8.8	3731	10.9	2035	594
10:36	3536	8.8	3724	10.9	2125	621
10:37	3475	8.7	3772	11.0	2124	621
10:38	3502	8.7	3758	11.0	2078	607
10:39	3521	8.8	3746	11.0	2125	621
10:40	3882	9.7	3491	10.2	1457	421
10:41	4078	10.2	3336	9.7	919	259
10:42	4021	10.0	3380	9.9	897	252
10:43	4084	10.2	3336	9.7	929	262
10:44	3994	10.0	3404	9.9	837	234
10:45	4003	10.0	3402	9.9	808	226
10:46	4150	10.4	3288	9.6	724	200
10:47	4160	10.4	3277	9.6	761	212
10:48	4177	10.4	3262	9.5	769	214
10:49	4040	10.1	3365	9.8	846	237
10:50	4153	10.4	3282	9.6	886	249
10:51	4134	10.3	3294	9.6	786	219
10:52	4143	10.3	3290	9.6	783	218
10:53	4113	10.3	3315	9.7	823	230
10:54	4196	10.5	3254	9.5	787	219
10:55	4266	10.6	3195	9.3	750	208
10:56	4260	10.6	3197	9.3	772	215
10:57	4221	10.5	3227	9.4	798	223
10:58	4320	10.8	3146	9.2	855	240
10:59	4287	10.7	3169	9.2	802	224
11:00	4178	10.4	3253	9.5	791	221
11:01	4185	10.4	3248	9.5	796	222
11:02	4194	10.5	3242	9.5	783	218
11:03	4015	10.0	3378	9.9	763	212
11:04	3908	9.7	3468	10.1	987	279
11:05	3999	10.0	3405	9.9	978	277
11:06	4097	10.2	3327	9.7	870	244
11:07	4176	10.4	3267	9.5	823	230
11:08	4160	10.4	3278	9.6	772	215
11:09	4082	10.2	3339	9.7	780	217
11:10	4132	10.3	3300	9.6	903	254
11:11	3579	8.9	3713	10.9	1261	362
11:12	3304	8.2	3936	11.5	2285	669
11:13	3438	8.6	3849	11.3	1805	525
11:14	3696	9.2	3653	10.7	1141	326

RUN DATA

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
11:15	3848	9.6	3530	10.3	894	251
11:16	4001	10.0	3408	10.0	814	227
11:17	3880	9.7	3493	10.2	824	230
11:18	3660	9.1	3660	10.7	1180	337
11:19	3483	8.7	3794	11.1	1651	479
11:20	3345	8.3	3914	11.5	2584	759
11:21	3629	9.0	3699	10.8	1780	518
11:22	3788	9.4	3572	10.4	1268	364
11:23	3766	9.4	3584	10.5	1394	402
11:24	3906	9.7	3475	10.2	1219	349
11:25	3731	9.3	3604	10.5	1413	407
11:26	4177	10.4	3269	9.5	1093	311
11:27	4630	11.6	2907	8.5	937	264
11:28	4489	11.2	2995	8.7	917	258
11:29	4148	10.3	3255	9.5	865	243
11:30	3975	9.9	3392	9.9	1015	288
11:31	3925	9.8	3439	10.0	1171	335
11:32	3981	9.9	3400	9.9	966	273
11:33	4043	10.1	3348	9.8	917	258
11:34	4099	10.2	3298	9.6	939	265
11:35	3959	9.9	3388	9.9	1146	327
11:36	3971	9.9	3373	9.8	1062	302
11:37	3937	9.8	3395	9.9	1052	299
Avg	3957	9.9	3426	10.0	1130	322

RUN DATA

Number 5

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
12:41	3504	8.7	3746	11.0	1902	554
12:42	3645	9.1	3648	10.7	1864	543
12:43	3740	9.3	3575	10.5	1842	536
12:44	3668	9.1	3628	10.6	1806	525
12:45	3652	9.1	3644	10.7	1670	485
12:46	3667	9.1	3634	10.6	1539	445
12:47	3716	9.3	3596	10.5	1137	324
12:48	3727	9.3	3582	10.5	983	278
12:49	3596	9.0	3669	10.7	1048	298
12:50	3463	8.6	3769	11.0	1469	424
12:51	3897	9.7	3445	10.1	1098	313
12:52	3993	10.0	3368	9.8	943	266
12:53	3949	9.8	3403	9.9	934	263
12:54	4009	10.0	3359	9.8	874	245
12:55	4013	10.0	3358	9.8	852	239
12:56	3921	9.8	3432	10.0	868	244
12:57	3833	9.6	3503	10.2	944	266
12:58	3900	9.7	3450	10.1	965	273
12:59	4015	10.0	3358	9.8	1014	288
13:00	3999	10.0	3368	9.8	1066	303
13:01	3950	9.9	3403	9.9	996	282
13:02	3905	9.7	3435	10.0	987	279
13:03	3776	9.4	3534	10.3	963	272
13:04	3800	9.5	3518	10.3	1040	295
13:05	3731	9.3	3574	10.5	1057	300
13:06	3796	9.5	3523	10.3	1036	294
13:07	3775	9.4	3536	10.3	1008	286
13:08	3833	9.6	3492	10.2	1024	291
13:09	3927	9.8	3417	10.0	934	263
13:10	4001	10.0	3356	9.8	964	272
13:11	3980	9.9	3372	9.8	931	263
13:12	4088	10.2	3286	9.6	968	274
13:13	4091	10.2	3281	9.6	916	258
13:14	4038	10.1	3322	9.7	899	253
13:15	4063	10.1	3304	9.6	868	244
13:16	4021	10.0	3334	9.7	891	251
13:17	4145	10.3	3239	9.4	842	236
13:18	4130	10.3	3248	9.5	874	245
13:19	3902	9.7	3421	10.0	943	266
13:20	3796	9.5	3506	10.2	1053	299
13:21	3836	9.6	3481	10.2	1017	288

RUN DATA

Number 5

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **20 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
13:22	3904	9.7	3431	10.0	944	266
13:23	3975	9.9	3374	9.9	843	236
13:24	4073	10.2	3299	9.6	912	257
13:25	4127	10.3	3255	9.5	938	265
13:26	3899	9.7	3430	10.0	898	253
13:27	3691	9.2	3593	10.5	1083	308
13:28	3889	9.7	3449	10.1	1226	351
13:29	4080	10.2	3293	9.6	1119	319
13:30	3924	9.8	3413	10.0	1082	308
13:31	4061	10.1	3310	9.7	1099	313
13:32	4114	10.3	3269	9.5	984	278
13:33	4141	10.3	3247	9.5	1017	288
13:34	4191	10.5	3204	9.3	984	278
13:35	4103	10.2	3276	9.6	950	268
13:36	4020	10.0	3344	9.8	913	257
13:37	3986	9.9	3373	9.8	1009	286
13:38	4122	10.3	3271	9.5	938	265
13:39	4024	10.0	3347	9.8	870	244
13:40	4042	10.1	3335	9.7	863	242
Avgs	3914	9.8	3427	10.0	1062	302

RUN DATA

Number 6

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
14:23	4039	10.1	3328	9.7	751	209
14:24	3997	10.0	3359	9.8	765	213
14:25	3951	9.9	3394	9.9	759	211
14:26	3955	9.9	3391	9.9	756	210
14:27	3920	9.8	3418	10.0	747	207
14:28	3922	9.8	3417	10.0	763	212
14:29	3886	9.7	3443	10.1	763	212
14:30	3804	9.5	3502	10.2	794	221
14:31	3855	9.6	3462	10.1	780	217
14:32	3792	9.5	3511	10.3	754	209
14:33	3738	9.3	3554	10.4	783	218
14:34	3710	9.3	3578	10.5	806	225
14:35	3794	9.5	3518	10.3	767	213
14:36	3863	9.6	3464	10.1	726	201
14:37	3779	9.4	3525	10.3	723	200
14:38	3714	9.3	3577	10.5	742	206
14:39	3722	9.3	3573	10.4	784	218
14:40	3866	9.6	3462	10.1	807	225
14:41	3985	9.9	3365	9.8	791	221
14:42	3988	9.9	3358	9.8	770	214
14:43	3883	9.7	3437	10.0	791	221
14:44	3904	9.7	3424	10.0	809	226
14:45	3898	9.7	3428	10.0	759	211
14:46	3834	9.6	3476	10.2	775	216
14:47	3792	9.5	3509	10.3	826	231
14:48	3761	9.4	3534	10.3	842	236
14:49	3798	9.5	3502	10.2	839	235
14:50	3761	9.4	3527	10.3	809	226
14:51	3680	9.2	3577	10.5	938	265
14:52	3580	8.9	3650	10.7	946	267
14:53	3560	8.9	3667	10.7	899	253
14:54	3560	8.9	3668	10.7	954	269
14:55	3668	9.1	3583	10.5	822	230
14:56	3637	9.1	3604	10.5	736	204
14:57	3457	8.6	3747	11.0	796	222
14:58	3319	8.3	3860	11.3	1043	296
14:59	3363	8.4	3835	11.2	1040	295
15:00	3533	8.8	3709	10.9	942	266
15:01	3623	9.0	3638	10.6	854	239
15:02	3924	9.8	3409	10.0	786	219
15:03	3892	9.7	3425	10.0	674	185

RUN DATA

Number 6

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**

Operator: **T. Simpkins**

Date: **20 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
15:04	3647	9.1	3613	10.6	692	191
15:05	3833	9.6	3479	10.2	670	184
15:06	3836	9.6	3473	10.1	667	183
15:07	3936	9.8	3397	9.9	686	189
15:08	3959	9.9	3374	9.9	649	178
15:09	3843	9.6	3446	10.1	694	191
15:10	3493	8.7	3707	10.8	1065	303
15:11	3402	8.5	3790	11.1	1300	373
15:12	3533	8.8	3692	10.8	1039	295
15:13	3726	9.3	3551	10.4	874	245
15:14	3912	9.8	3402	9.9	824	230
15:15	3904	9.7	3402	9.9	732	203
15:16	3666	9.1	3580	10.5	733	203
15:17	3510	8.8	3702	10.8	907	255
15:18	3733	9.3	3547	10.4	915	258
15:19	4380	10.9	3046	8.9	790	220
15:20	4595	11.5	2866	8.3	696	192
15:21	4413	11.0	2976	8.7	663	182
15:22	3529	8.8	3646	10.7	990	280
Avg	3793	9.5	3502	10.2	813	227

BIAS

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 08:34

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	183	0.4	0.4	2.0 ✓	Pass
Span	20.0	7941	19.8	-0.2	-1.0 ✓	Pass

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	223	0.4	0.4	2.0 ✓	Pass
Span	20.3	6652	19.7	-0.6	-3.0 ✓	Pass

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-10	30	-8	2	0.1 ✓	Pass
Span	1295	4320	1280	-15	-0.6 ✓	Pass

low

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 11:40

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	57	0.1	0.1	0.5 ✓	Pass
Span	20.0	7954	19.9	-0.1	-0.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.4	57	0.1	-0.3	-1.5 ✓	Pass
Span	19.8	7954	19.9	0.1	0.5 ✓	Pass

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	124	0.1	0.1	0.5 ✓	Pass
Span	20.3	6759	20.0	-0.3	-1.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.4	124	0.1	-0.3	-1.5 ✓	Pass
Span	19.7	6759	20.0	0.3	1.5 ✓	Pass

*Bias No. 1

JS

BIAS AND CALIBRATION DRIFT

Number 2

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 11:40

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-10	28	-9	1	0.0 ✓	Pass
Span	1295	4282	1269	-26	-1.0 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status
Gas	ppm	mv	ppm	%	
Zero	-8	28	-9	-0.0 ✓	Pass
Span	1280	4282	1269	-0.4 ✓	Pass

*Bias No. 1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 13:41

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	51	0.1	0.1	0.5 ✓	Pass
Span	20.0	7924	19.8	-0.2	-1.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	51	0.1	0.0 ✓	Pass	
Span	19.9	7924	19.8	-0.1 ✓	Pass	

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	124	0.1	0.1	0.5 ✓	Pass
Span	20.3	6781	20.0	-0.3	-1.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	124	0.1	0.0 ✓	Pass	
Span	20.0	6781	20.0	0.0 ✓	Pass	

*Bias No. 2

✓

BIAS AND CALIBRATION DRIFT

Number 3

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **20 Feb 2020**

Calibration 1

Start Time: 13:41

CO
 Method: EPA 10
 Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-10	40	-5	5	0.2 ✓	Pass
Span	1295	4309	1277	-18	-0.7 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	%		
Zero	-9	40	-5	4	0.2 ✓	Pass
Span	1269	4309	1277	8	0.3 ✓	Pass

*Bias No. 2

Handwritten mark

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 15:23

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	30	0.0	0.0	0.0 ✓	Pass
Span	20.0	7910	19.8	-0.2	-1.0 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	30	0.0	-0.1	-0.5 ✓	Pass
Span	19.8	7910	19.8	0.0	0.0 ✓	Pass

*Bias No. 3

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	128	0.1	0.1	0.5 ✓	Pass
Span	20.3	6776	20.0	-0.3	-1.5 ✓	Pass

Calibration Drift						
Standard	Initial*	Final	Difference	Drift	Status	
Gas	%	mv	%	%		
Zero	0.1	128	0.1	0.0	0.0 ✓	Pass
Span	20.0	6776	20.0	0.0	0.0 ✓	Pass

*Bias No. 3

JSW

BIAS AND CALIBRATION DRIFT

Number 4

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 15:23

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results

Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	-10	45	-4	6	0.2 ✓	Pass
Span	1295	4308	1277	-18	-0.7 ✓	Pass

Calibration Drift

Standard	Initial*	Final	Difference	Drift	Status	
Gas	ppm	mv	ppm	%		
Zero	-5	45	-4	1	0.0 ✓	Pass
Span	1277	4308	1277	0	0.0 ✓	Pass

*Bias No. 3

✓

CALIBRATION DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Start Time: 08:25

O₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero	-	3
10.0 ✓	SG9152789BAL	4034
20.0 ✓	CC252945	7986

Curve Coefficients

Slope	Intercept	Corr. Coeff.
399.4	15	>0.9999 ✓

CO₂

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

%	Cylinder ID	Result, mv
Zero ✓	-	93
10.0 ✓	SG9152789BAL	3403
20.2 ✓	CC252945	6851

Curve Coefficients

Slope	Intercept	Corr. Coeff.
334.2	81	>0.9999 ✓

Jar

CALIBRATION DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Start Time: 08:25

CO

Method: EPA 10

Calibration Type: Linear Regression

Calibration Results

ppm	Cylinder ID	Result, mv
Zero	-	23
1274 ✓	CC177948	4367
2517 ✓	CC426172	8403

Curve Coefficients

Slope	Intercept	Corr. Coeff.
3.330	57	0.9999 ✓

✓

CALIBRATION ERROR DATA

Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **20 Feb 2020**

Calibration 1

Start Time: 08:25

O₂

Method: EPA 3A
Span Conc. 20.0 %

Slope 399.4 Intercept 15.5

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	3	0.0	0.0	0.0 ✓	Pass
10.0	4034	10.1	0.1	0.5 ✓	Pass
20.0	7986	20.0	0.0	0.0 ✓	Pass

CO₂

Method: EPA 3A
Span Conc. 20.2 %

Slope 334.2 Intercept 81.0

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	93	0.0	0.0	0.0 ✓	Pass
10.0	3403	9.9	-0.1	-0.5 ✓	Pass
20.2	6851	20.3	0.1	0.5 ✓	Pass

CO

Method: EPA 10
Span Conc. 2517 ppm

Slope 3.330 Intercept 57

Standard ppm	Response mv	Result ppm	Difference ppm	Error %	Status
Zero	23	-10	-10	-0.4 ✓	Pass
1274	4367	1295	21	0.8 ✓	Pass
2517	8403	2507	-10	-0.4 ✓	Pass

JSW

METHODS AND ANALYZERS

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB2**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **20 Feb 2020**

File: C:\Data\New Indy- Catawba\Boiler MACT CEM Files Feb 2020\CB2 Feb 20 2020 A.cem
Program Version: 2.1, built 19 May 2017 **File Version:** 2.03
Computer: TR271DT1 **Trailer:** 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN:E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	20.0

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	CAI 600 SN: E07015-M
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	20.2

Channel 3

Analyte	CO
Method	EPA 10, Using Bias
Analyzer Make, Model & Serial No.	Teledyne T300M S/N 365
Full-Scale Output, mv	10000
Analyzer Range, ppm	3000
Span Concentration, ppm	2517



MERCURY

New Indy
Catawba
Catawba, SC

15730.001.003
CB 2

CB 2
Mercury lb/Tbtu

Run No.	Dry Concentration ug/m3	Dry CO2 %	Emission Factor Total lb/MMBtu	Emission Factor Total lb/Tbtu
4	0.121 ✓	10.1 ✓	1.32E-07	0.132
5	0.211 ✓	10.1 ✓	2.27E-07	0.227
6	0.215 ✓	10.3 ✓	2.24E-07	0.224
	0.182	10.2	1.94E-07	0.194

Run 4 CO2 F-Factor 1769 ✓
Run 5 CO2 F-Factor 1745 ✓
Run 6 CO2 F-Factor 1722 ✓

AM

Method 30B
Sample Calculation Summary

Run ID	Sample Volume Vmstd L	Tube ID	Sample Mass		Breakthrough		Total Mass		Concentration		Replicates		Field Recovery Data	
			Front ng	Back ng	%	OK?	Hg ng	Dry µg/m3	% RD	OK?	Mass ng	Recovery %	Recovery OK?	
4A	60.949	OL405053	7.0 ✓	0.6 ✓	8.57	OK	7.60	0.125						
4B	60.246	OL521181	31.0 ✓	1.1 ✓	3.55	OK	7.10	0.118					25	98.35
1								0.121	2.82	OK				
5A	61.346	OLC102081	11.0 ✓	1.0 ✓	9.09	OK	12.00	0.196						
5B	60.310	OLS46120	38.0 ✓	0.6 ✓	1.58	OK	13.60	0.226					25	107.21
2								0.211	7.10	OK				
6A	61.280	OLC101774	13.0 ✓	0.6 ✓	4.62	OK	13.60	0.222						
6B	61.232	OLS46117	37.0 ✓	0.7 ✓	1.89	OK	12.70	0.207					25	96.44
3								0.215	3.38	OK				
Average														100.7

Note: The method detection limit (MDL) of 0.6 was used for the back-half results. The MDL study is included in Appendix F.

MERCURY FIELD DATA - EPA METHOD 30B

RUN 4

Client	New Indy ✓	Date	2/20/20 ✓
Facility	Catawba ✓	WO#	15730.001.003
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 2 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train ✓		B Train ✓				
Meter ID		AOV15A ✓		AOV15B ✓			
Meter Correction Factor		0.9989 ✓		0.9942 ✓			
Tube ID		OL405053 ✓		OL521181 ✓			
Start Time		10:33 ✓		10:33 ✓			
End Time		11:41 ✓		11:41 ✓			
Sample Time		1:08		1:08			
Final DGM Reading	L	59.115 ✓		59.039 ✓			
Initial DGM Reading	L	0.000 ✓	vs. Target Volume	0.000 ✓			
Sample Volume	L	59.115	Train A Train B	59.039 ✓			
Standard Sample Volume	Vmstd, L	60.949	OK OK	60.246			
Pre-Test Leak Check	L/min	0.000 @ 15" ✓	Agreement	0.000 @ 15" ✓			
Post-Test Leak Check	L/min	0.000 @ 7" ✓	OK	0.000 @ 9" ✓			
Elapsed time, min		DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp
		°F	°F	Hg.	Hg.	°F	°F
5		43 ✓	302 ✓	5 ✓	6 ✓	45 ✓	302 ✓
10		43 ✓	304 ✓	6 ✓	6 ✓	46 ✓	304 ✓
15		43 ✓	304 ✓	6 ✓	6 ✓	46 ✓	304 ✓
20		43 ✓	304 ✓	6 ✓	6 ✓	46 ✓	304 ✓
25		44 ✓	305 ✓	6 ✓	7 ✓	46 ✓	305 ✓
30		44 ✓	305 ✓	6 ✓	7 ✓	47 ✓	305 ✓
35		45 ✓	305 ✓	6 ✓	6 ✓	48 ✓	305 ✓
40		45 ✓	306 ✓	6 ✓	7 ✓	48 ✓	306 ✓
45		45 ✓	302 ✓	6 ✓	7 ✓	48 ✓	302 ✓
50		45 ✓	302 ✓	6 ✓	7 ✓	48 ✓	302 ✓
55		45 ✓	304 ✓	6 ✓	7 ✓	48 ✓	304 ✓
60		45 ✓	304 ✓	6 ✓	8 ✓	48 ✓	304 ✓
Average		44.2	303.9	5.9	6.7	47.0	303.9

Notes: Stack Temp. 420/425 ✓

Am

MERCURY FIELD DATA - EPA METHOD 30B

RUN 5

Client	New Indy ✓	Date	2/20/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 2 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

		A Train ✓		B Train ✓			
Meter ID		AOV15A ✓		AOV15B ✓			
Meter Correction Factor		0.9989 ✓		0.9942 ✓			
Tube ID		OLC102081 ✓		OL546120 ✓			
Start Time		12:40 ✓		12:40 ✓			
End Time		13:47 ✓		13:47 ✓			
Sample Time		1:07		1:07			
Final DGM Reading	L	59.795 ✓		59.442 ✓			
Initial DGM Reading	L	0.000 ✓	vs. Target Volume	0.000 ✓			
Sample Volume	L	59.795 ✓	Train A	Train B	59.442 ✓		
Standard Sample Volume	Vmstd, L	61.346	OK	OK	60.310		
Pre-Test Leak Check	L/min	0.000 @ 15" ✓	Agreement		0.000 @ 15" ✓		
Post-Test Leak Check	L/min	0.000 @ 7" ✓	OK		0.000 @ 7" ✓		
Elapsed time, min		DGM Temp	Probe Temp	Vacuum	Vacuum	DGM Temp	Probe Temp
		°F	°F	Hg.	Hg.	°F	°F
5		46 ✓	306 ✓	5 ✓	5 ✓	48 ✓	306 ✓
10		46 ✓	305 ✓	5 ✓	5 ✓	48 ✓	305 ✓
15		46 ✓	305 ✓	5 ✓	5 ✓	49 ✓	305 ✓
20		46 ✓	307 ✓	5 ✓	5 ✓	49 ✓	307 ✓
25		47 ✓	307 ✓	5 ✓	5 ✓	50 ✓	307 ✓
30		47 ✓	306 ✓	6 ✓	6 ✓	50 ✓	306 ✓
35		47 ✓	306 ✓	6 ✓	6 ✓	50 ✓	306 ✓
40		47 ✓	304 ✓	7 ✓	7 ✓	51 ✓	304 ✓
45		47 ✓	304 ✓	7 ✓	7 ✓	51 ✓	304 ✓
50		47 ✓	305 ✓	7 ✓	7 ✓	51 ✓	305 ✓
55		47 ✓	306 ✓	7 ✓	7 ✓	51 ✓	306 ✓
60		47 ✓	306 ✓	7 ✓	7 ✓	51 ✓	306 ✓
Average		46.7	305.6	6.0	6.0	49.9	305.6

Notes: Stack Temp. 423/427 ✓

AM

MERCURY FIELD DATA - EPA METHOD 30B

RUN 6

Client	New Indy ✓	Date	2/20/20 ✓
Facility	Catawba ✓	WO#	15730.001.003 ✓
Location	Catawba, SC ✓	Bp, in. Hg	29.50 ✓
Source	CB 2 ✓	Spike mass, ng in "B"	25 ✓
Train Operator	BA/MS ✓	Target Volume, L	60 ✓

	A Train					B Train ✓	
Meter ID		AOV15A ✓				AOV15B ✓	
Meter Correction Factor		0.9989 ✓				0.9942 ✓	
Tube ID		OLC101774 ✓				OL546117 ✓	
Start Time		14:22 ✓				14:22 ✓	
End Time		15:30 ✓				15:30 ✓	
Sample Time		1:08				1:08	
Final DGM Reading	L	59.731 ✓				60.361 ✓	
Initial DGM Reading	L	0.000 ✓		vs. Target Volume		0.000 ✓	
Sample Volume	L	59.731 ✓		Train A	Train B	60.361 ✓	
Standard Sample Volume	Vmstd, L	61.280		OK	OK	61.232	
Pre-Test Leak Check	L/min	0.000 @ 15" ✓		Agreement		0.000 @ 15" ✓	
Post-Test Leak Check	L/min	0.000 @ 6" ✓		OK		0.000 @ 7" ✓	
Elapsed time, min	DGM Temp	Probe Temp	Vacuum		DGM Temp	Probe Temp	
	°F	°F	Hg.	Hg.	°F	°F	
5	46 ✓	300 ✓	4 ✓	5 ✓	50 ✓	300 ✓	
10	46 ✓	300 ✓	4 ✓	5 ✓	50 ✓	300 ✓	
15	46 ✓	302 ✓	4 ✓	5 ✓	50 ✓	302 ✓	
20	46 ✓	305 ✓	4 ✓	5 ✓	50 ✓	305 ✓	
25	46 ✓	305 ✓	4 ✓	5 ✓	50 ✓	305 ✓	
30	47 ✓	306 ✓	5 ✓	6 ✓	50 ✓	306 ✓	
35	47 ✓	306 ✓	5 ✓	6 ✓	50 ✓	306 ✓	
40	47 ✓	305 ✓	5 ✓	6 ✓	50 ✓	305 ✓	
45	47 ✓	305 ✓	6 ✓	6 ✓	50 ✓	305 ✓	
50	47 ✓	306 ✓	6 ✓	6 ✓	50 ✓	305 ✓	
55	47 ✓	306 ✓	6 ✓	7 ✓	50 ✓	306 ✓	
60	48 ✓	306 ✓	6 ✓	7 ✓	50 ✓	306 ✓	
Average	46.7	304.3	4.9	5.8	50.0	304.3	

Notes: Stack Temp. 401/404 ✓

nu

MERCURY FIELD DATA - EPA METHOD 30B RUN 4

Client: New Indy
Plant-Facility: Catawba
Location: Catawba, SC
Source: N0.2 CB
Train Operator: BA/MS

Date: 2/18/20 ²⁰ ³¹⁷
Work Order#: 15703.001.003 ^{15730.001.003}
Bp, in. Hg: 29.50
Spike mass, ng in "B": 25
Target Volume, L: 60

A Train				B Train				
Meter ID		AOV 15A		Meter ID		AOV 15B		
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942		
Tube ID		0L405053		Tube ID		0L521181		
Start Time		10:33		Start Time		10:33		
End Time		11:41		End Time		11:41		
Sample Time		60		Sample Time		60		
Final DGM Reading	L	59.115		L		54.039		
Initial DGM Reading	L	0.000		L		0.000		
Sample Volume	L	59.115		L		59.039		
Standard Sample Volume	Vmstd, L	61.114		Vmstd, L		60.409		
Pre-Test Leak Check	L/min	0.000	@ VAC: Hg= 15"	L/min	0.000	@ VAC: Hg= 15"		
Post-Test Leak Check	L/min	0.000	@ VAC: Hg= 7"	L/min	0.000	@ VAC: Hg= 9"		
Elapsed time, min		DGM Temp	Probe Temp	Vacuum		DGM Temp	Probe Temp	Vacuum
		°F	°F	Hg.		°F	°F	Hg.
5		43	302	5	5	45	302	6
10		43	304	6	10	46	304	6
15		43	304	6	15	46	304	6
20		43	304	6	20	46	304	6
25		44	305	6	25	46	305	7
30		44	305	6	30	47	305	7
35		45	305	6	35	48	305	6
40		45	306	6	40	48	306	7
45		45	302	6	45	48	302	7
50		45	302	6	50	48	302	7
55		45	304	6	55	48	304	7
60		45	304	6	60	48	304	8
Average		44.166	303.916	5.916	Average	47.0	303.916	6.66
Moisture Data				Max Vac. 6				Max Vac. 8
Post-test Condenser Volume	mL							
Pre-test Condenser Volume	mL							
Collected Volume	mL							
Standard Volume	Vwstd, L							
BWS								

Notes: Stack Temp.- 420/425

MERCURY FIELD DATA - EPA METHOD 30B RUN 5

Client: New Indy
Plant-Facility: Catawba
Location: Catawba, SC
Source: N0.2 CB
Train Operator: BA/MS

Date: 2/18/20
Work Order#: 15703.001.003 ^{NPI} 15730.001.003
Bp, in. Hg: 29.50
Spike mass, ng in "B": 25
Target Volume, L: 60

A Train				B Train					
Meter ID		AOV 15A		Meter ID		AOV 15B			
Meter Correction Factor		0.9989		Meter Correction Factor		0.9942			
Tube ID		06402081		Tube ID		06546120			
Start Time		12:40		Start Time		12:40			
End Time		13:47		End Time		13:47			
Sample Time		60		Sample Time		60			
Final DGM Reading	L	59.795		L		59.442			
Initial DGM Reading	L	0.000		L		0.000			
Sample Volume	L	59.795		L		59.442			
Standard Sample Volume	Vmstd, L	61.512		Vmstd, L		60.473			
Pre-Test Leak Check	L/min	0.000	@ VAC: Hg= 15'	0.000		@ VAC: Hg= 15'			
Post-Test Leak Check	L/min	0.000	@ VAC: Hg= 7'	0.000		@ VAC: Hg= 7'			
Elapsed time, min	DGM Temp		Probe Temp	Vacuum	DGM Temp		Probe Temp	Vacuum	
	°F		°F	Hg.	°F		°F	Hg.	
5	46		306	5	5	48		306	5
10	46		305	5	10	48		305	5
15	46		305	5	15	49		305	5
20	46		307	5	20	49		307	5
25	47		307	5	25	50		307	5
30	47		306	6	30	50		306	6
35	47		306	6	35	50		306	6
40	47		304	7	40	51		307	7
45	47		304	7	45	51		304	7
50	47		305	7	50	51		305	7
55	47		306	7	55	51		306	7
60	47		306	7	60	51		306	7
Average	46.66		305.583		Average	49.916		305.583	
Moisture Data				Max Vac. 7				Max Vac. 7	
Post-test Condenser Volume	mL								
Pre-test Condenser Volume	mL								
Collected Volume	mL								
Standard Volume	Vwstd, L								
BWS									

Notes: Stack Temp. - 423/427

MERCURY FIELD DATA - EPA METHOD 30B RUN 6

Client: New Indy
Plant-Facility: Catawba
Location: Catawba, SC
Source: NO.2 CB
Train Operator: BA/MS

20
AP
3/21

Date: 2/18/20
Work Order#: 15703.001.003 15730.001.003
Bp, in. Hg: 29.50
Spike mass, ng in "B": 25
Target Volume, L: 60

A Train				B Train			
Meter ID	AOV 15A			Meter ID	AOV 15B		
Meter Correction Factor	0.9989			Meter Correction Factor	0.9942		
Tube ID	0LC101774			Tube ID	0LS46117		
Start Time	14:22			Start Time	14:22		
End Time	MAY 59.731 15:30			End Time	15:30 14:50 14:25		
Sample Time	60			Sample Time	60		
Final DGM Reading	L	59.731		L	60.361		
Initial DGM Reading	L	0.000		L	0.000		
Sample Volume	L	59.731		L	60.361		
Standard Sample Volume	Vmstd, L	61.446		Vmstd, L	61.398		
Pre-Test Leak Check	L/min	0.000 @ VAC: Hg= 15'		L/min	0.000 @ VAC: Hg= 15'		
Post-Test Leak Check	L/min	0.000 @ VAC: Hg= 6'		L/min	0.000 @ VAC: Hg= 7'		
Elapsed time, min	DGM Temp		Probe Temp	DGM Temp		Probe Temp	Vacuum
	°F		°F	°F		°F	Hg.
5	46		300	5	50		300 5
10	46		300	10	50		300 5
15	46		302	15	50		302 5
20	46		305	20	50		305 5
25	46		305	25	50		305 5
30	47		306	30	50		306 6
35	47		306	35	50		306 6
40	47		305	40	50		305 6
45	47		305	45	50		305 6
50	47		306	50	50		305 6
55	47		306	55	50		306 7
60	48		306	60	50		306 7
Average	46.666		304.333	Average	50.0		304.333
Moisture Data				Moisture Data			
			Max Vac. 6				Max Vac. 7
Post-test Condenser Volume	mL			Post-test Condenser Volume	mL		
Pre-test Condenser Volume	mL			Pre-test Condenser Volume	mL		
Collected Volume	mL			Collected Volume	mL		
Standard Volume	Vwstd, L			Standard Volume	Vwstd, L		
BWS				BWS			

Notes: Stack Temp.- 401/404



APPENDIX E LABORATORY DATA



PARTICULATE MATTER

CLIENT : New Indy, Catawba LLC Balance ID: Mettler AE163
 WESTON W.O. No. : 15730.001.003 Density of Acetone (g/mL): 0.7848
 Date Analyzed : 2/18/2020 Lab Ambient Temp (F): 68.7
 Analyst : TS Lab Rel Humidity (%): 48
 Barometric Pressure (Hg): 29.5

Source	CB1			
Operating Mode/Condition				
Field Run No.	ONE	TWO	THREE	FIELD BLANK
LIQUID FRACTION				
Probe Wash ID	DB 3700	DB 3701	DB 3702	DB 3709
Beaker ID	CQ 15-01	CQ 17-01	CQ 18-01	CP 12-12
Liquid Volume (mL)	75	65	65	200
Initial Beaker Weights (g)	0	0	0	0
Weight #1	125.4395	98.4939	103.408	100.9938
Weight #2	125.4392	98.4938	103.4079	100.9938
Average Initial Weight (g)	125.4394	98.4939	103.4080	100.9938
Final Beaker Weights (g)				0.0000
Weight #1	125.4447	98.4992	103.4089	100.9939
Weight #2	125.4447	98.4992	103.4090	100.9939
Average Final Weight (g)	125.4447	98.4992	103.4090	100.9939
Final-Initial Beaker Wts. (g)	0.0053	0.0053	0.0010	0.0001
Sample/Blank Volume Ratio	0.3750	0.3250	0.3250	
Liquid Blank Correction (g)	0.0000	0.0000	0.0000	
Liquid Particulate Weight (g)	0.0053	0.0053	0.0010	0.0001
FILTER FRACTION				
Filter ID	DB 3700	DB 3701	DB 3702	DB 3709
Initial Filter Weights (g)	0.0000	0.0000	0.0000	0.0000
Weight #1	0.4805	0.4795	0.4630	0.4843
Weight #2	0.4802	0.4791	0.4626	0.4845
Average Initial Weight (g)	0.4804	0.4793	0.4628	0.4844
Final Filter Weights (g)	0.0000	0.0000	0.0000	0.0000
Weight #1	0.4937	0.4877	0.4757	0.4845
Weight #2	0.4939	0.4876	0.4757	0.4846
Average Final Weight (g)	0.4938	0.4877	0.4757	0.4846
Final-Initial Filter Wts. (g)	0.0134	0.0084	0.0129	0.0002
Filter Blank (g)	0.0002	0.0002	0.0002	
Filter Particulate Weight (g)	0.0134	0.0084	0.0129	
SUMMARY				
Filter Particulate Weight (g)	0.0134	0.0084	0.0129	
Liquid Particulate Weight (g)	0.0053	0.0053	0.0010	
Net Particulate Weight (g)	0.0187	0.0137	0.0139	

Sample Recovery Solution Acetone
 Weight Percent of Blank 0.0001%
 Liquid Fraction

Note: If the blank liquid fraction has a residue weight percent of greater than 0.001 percent, then the samples are not blank corrected.

ASG-SH ✓

CLIENT : New Indy, Catawba LLC Balance ID: Mettler AE163
 WESTON W.O. No. : 15730.001.003 Density of Acetone (g/mL): 0.7848
 Date Analyzed : 2/19/2020 Lab Ambient Temp (F): 68.7
 Analyst : TS Lab Rel Humidity (%): 48
 Barometric Pressure (Hg): 29.45

Source Operating Mode/Condition	CB2			
	Condition 1			
Field Run No.	ONE	TWO	THREE	FIELD BLANK
LIQUID FRACTION				
Probe Wash ID	DB 3703	DB 3704	DB 3705	DB 3709
Beaker ID	CQ-25-1	CQ-26-1	CQ - 29-1	CP 12-12
Liquid Volume (mL)	75	75	65	200
Initial Beaker Weights (g)	0	0	0	0
Weight #1	111.9207	101.2327	99.2409	100.9938
Weight #2	111.9207	101.2323	99.2412	100.9938
Average Initial Weight (g)	111.9207	101.2325	99.2411	100.9938
Final Beaker Weights (g)				0.0000
Weight #1	111.9571	101.3644	99.2551	100.9939
Weight #2	111.9571	101.3644	99.2548	100.9939
Average Final Weight (g)	111.9571	101.3644	99.2550	100.9939
Final-Initial Beaker Wts. (g)	0.0364	0.1319	0.0139	0.0001
Sample/Blank Volume Ratio	0.3750	0.3750	0.3250	
Liquid Blank Correction (g)	0.0000	0.0000	0.0000	
Liquid Particulate Weight (g)	0.0364	0.1319	0.0139	0.0001
FILTER FRACTION				
Filter ID	DB 3703	DB 3704	DB 3705	DB 3709
Initial Filter Weights (g)	0.0000	0.0000	0.0000	0.0000
Weight #1	0.4814	0.4839	0.4780	0.4843
Weight #2	0.4812	0.4837	0.4779	0.4845
Average Initial Weight (g)	0.4813	0.4838	0.4780	0.4844
Final Filter Weights (g)	0.0000	0.0000	0.0000	0.0000
Weight #1	0.8091	1.0066	0.5432	0.4845
Weight #2	0.8092	1.0068	0.5432	0.4846
Average Final Weight (g)	0.8092	1.0067	0.5432	0.4846
Final-Initial Filter Wts. (g)	0.3279	0.5229	0.0652	0.0002
Filter Blank (g)	0.0002	0.0002	0.0002	
Filter Particulate Weight (g)	0.3279	0.5229	0.0652	
SUMMARY				
Filter Particulate Weight (g)	0.3279	0.5229	0.0652	
Liquid Particulate Weight (g)	0.0364	0.1319	0.0139	
Net Particulate Weight (g)	0.3643	0.6548	0.0791	

Sample Recovery Solution Acetone
 Weight Percent of Blank 0.0001%
 Liquid Fraction

Note: If the blank liquid fraction has a residue weight percent of greater than 0.001 percent, then the samples are not blank corrected.

As for 9/11/20

CLIENT : New Indy, Catawba LLC Balance ID: Mettler AE163
 WESTON W.O. No. : 15730.001.003 Density of Acetone (g/mL): 0.7848
 Date Analyzed : 2/20/2020 Lab Ambient Temp (F): 68.7
 Analyst : TS Lab Rel Humidity (%): 48
 Barometric Pressure (Hg): 29.58

Source Operating Mode/Condition	CB2 Condition 2			
	FOUR	FIVE	SIX	FIELD BLANK
Field Run No.				
LIQUID FRACTION				
Probe Wash ID	DB 3706	DB 3707	DB 3708	DB 3709
Beaker ID	CP 5-12	CP 6-12	CP 7-12	CP 12-12
Liquid Volume (mL)	100	80	80	200
Initial Beaker Weights (g)	0	0	0	0
Weight #1	104.5333	107.3289	94.9399	100.9938
Weight #2	104.5332	107.329	94.9399	100.9938
Average Initial Weight (g)	104.5333	107.3290	94.9399	100.9938
Final Beaker Weights (g)				0.0000
Weight #1	104.5716	107.3494	94.9522	100.9939
Weight #2	104.5717	107.3493	94.9521	100.9939
Average Final Weight (g)	104.5717	107.3494	94.9522	100.9939
Final-Initial Beaker Wts. (g)	0.0384	0.0204	0.0123	0.0001
Sample/Blank Volume Ratio	0.5000	0.4000	0.4000	
Liquid Blank Correction (g)	0.0001	0.0000	0.0000	
Liquid Particulate Weight (g)	0.0384	0.0204	0.0123	0.0001
FILTER FRACTION				
Filter ID	DB 3706	DB 3707	DB 3708	DB 3709
Initial Filter Weights (g)	0.0000	0.0000	0.0000	0.0000
Weight #1	0.4755	0.4819	0.4854	0.4843
Weight #2	0.4754	0.4819	0.4851	0.4845
Average Initial Weight (g)	0.4755	0.4819	0.4853	0.4844
Final Filter Weights (g)	0.0000	0.0000	0.0000	0.0000
Weight #1	0.6972	0.5679	0.5992	0.4845
Weight #2	0.6973	0.5680	0.5992	0.4846
Average Final Weight (g)	0.6973	0.5680	0.5992	0.4846
Final-Initial Filter Wts. (g)	0.2218	0.0861	0.1139	0.0002
Filter Blank (g)	0.0002	0.0002	0.0002	
Filter Particulate Weight (g)	0.2218	0.0861	0.1139	
SUMMARY				
Filter Particulate Weight (g)	0.2218	0.0861	0.1139	
Liquid Particulate Weight (g)	0.0384	0.0204	0.0123	
Net Particulate Weight (g)	0.2602	0.1065	0.1262	

Sample Recovery Solution Acetone
 Weight Percent of Blank 0.0001%
 Liquid Fraction

Note: If the blank liquid fraction has a residue weight percent of greater than 0.001 percent, then the samples are not blank corrected.

AS-34-SH ✓



HYDROGEN CHLORIDE

Inter-Office Memorandum



1625 Pumphrey Avenue, Auburn, AL 36832
334.466.5600

TO: Temp Simpkins, Project Manager
FROM: Staci Hickman, Laboratory Manager
PROJECT: New Indy Catawba
W.O. NO: 15730.001.003
SUBJECT: Method 26A Analysis Results
ACTION: Analysis of samples received on 21 February 2020

cc: File
Date: 25 February 2020
JOB NO.: 2020-038
NELAC Accreditation ID - 03024

NARRATIVE:

This memo with analytical results constitutes our report for the samples submitted to the laboratory for hydrogen chloride analysis. The samples arrived in good condition and in accordance with the Chain-of-Custody. The samples were prepared on 24 February and analyzed on 24 February through 25 February 2020. The analytical procedures followed USEPA Method 26A.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 90 days after the date of receipt.

These results meet all requirements of TNI, unless otherwise specified.

These results of this report relate only to the samples listed in the body of this report.

This report shall not be reproduced by any organization outside of Weston Solutions, Inc. in part or in full, without the written approval from Weston Solutions, Inc.

QUALITY ASSURANCE AND QUALITY CONTROL:

Quality control procedures conformed to the requirements of the referenced method and our quality assurance program. All quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results.

Replicate injections were performed on all samples and standards in this sample batch. The replicate injections had percent differences of 4 percent or less of the mean value.

Samples were blank corrected per EPA Method 26A. Note: If the blank corrected sample value falls below the limit of quantification, then the limit of quantification value will be used to calculate the total sample micrograms, and the value is reported as a less than value.

Additional quality control analysis results as well as the acceptance criteria are shown in the tables of the Quality Control Report.

Substantiating data is on file and available upon request.

Staci Hickman
Staci Hickman, Laboratory Manager



Analytical Laboratory
1625 Pumphrey Ave., Auburn, AL 36832
334.466.5600

Client : New Indy Catawba
WESTON W.O. # : 15730.001.003
Date Received : 2/21/2020

Lab Job #: 2020-038
Instrument ID: ICS 2000-Isabel
Analyst: AC/SH
Date(s) Analyzed: 2/24/2020-2/25/2020

Chloride Limit of Quantification (µg/mL): 0.125

Sample Identifier	Date Collected	Lab ID	Sample Volume (mL)	Dilution (v:v)	Analyzed Chloride (µg/mL)	Hydrogen Chloride (µg)
CB 1-Run 1	2/18/2020	AW 9062	615	1	1.95	1,230
CB 1-Run 2	2/18/2020	AW 9063	650	1	1.11	745
CB 1-Run 3	2/18/2020	AW 9064	654	1	0.98	656
Blank-0.1N H2SO4	2/20/2020	AW 9071	204	1	0.00	< 26
Blank-DiH2O	2/20/2020	AW 9072	194	1	0.00	< 25
CB 2-Run 1	2/19/2020	AW 9065	605	1	0.87	544
CB 2-Run 2	2/19/2020	AW 9066	604	1	0.26	161
CB 2-Run 3	2/19/2020	AW 9067	555	1	0.93	531
CB 2-Run 4	2/20/2020	AW 9068	582	1	8.97	5,370
CB 2-Run 5	2/20/2020	AW 9069	584	1	10.7	6,440
CB 2-Run 6	2/20/2020	AW 9070	581	1	14.6	8,710

Staci Hickman

Staci Hickman, Laboratory Manager

Client: New Indy Catawba

WESTON W.O. #: 15730.001.003

Table 1.1
Calibration Curve Verification Standard Analysis

Analysis Date	Laboratory ID	Chloride		
		Actual Value (µg/mL)	Analyzed Value (µg/mL)	Difference (%)
2/24/2020	9339-22-05	5.00	5.03	0.6%

Table 1.2
Laboratory Control Standard Analysis

Analysis Date	Laboratory ID	Chloride		
		Actual Value (µg/mL)	Calculated Value (µg/mL)	Difference (%)
2/24/2020	LCS 040919I	6.27	6.09	2.9%

Table 1.3
Duplicate Analysis

Analysis Date	Laboratory ID	Chloride		
		Original Value (µg/mL)	Duplicate Value (µg/mL)	Difference (%)
2/24/2020	AW 9063	1.11	1.13	0.8%

Table 1.4
Spike Analysis

Analysis Date	Laboratory ID	Chloride				
		Original Value (µg/mL)	Spiked Value (µg/mL)	Recovered Amount (µg/mL)	Spiked Amount (µg/mL)	Recovery (%)
2/24/2020	AW 9063	1.11	7.53	6.41	6.00	107%

- Chloride Limit of Quantification, LOQ (µg/mL): 0.125
- Note the actual analytical result rather than the LOQ was reported even when then analytical result was less than the LOQ.
- Consequently, certain differences in actual and calculated values may be skewed.

Calculations:

- Standard % Difference = $((\text{Actual Value} - \text{Calculated Value}) / \text{Actual Amount}) * 100$.
- Duplicate % Difference = $((\text{Average Value} - \text{Original Value}) / \text{Average Value}) * 100$.
- Spike % Recovery = $(\text{Recovered Amount} / \text{Spiked Amount}) * 100$.

Acceptance Criteria:

- The CCV Acceptance Criterion is ± 10 percent.
- The LCS Acceptance Criterion is ± 15 percent.
- The Duplicate Percent Difference Acceptance Criterion is ± 10 percent.
- The Spike Recovery Acceptance Criterion is 100 percent ± 30 percent.

Eluent Lot #: 9512-84-1

Spike Lot #: 1821812

Staci Hickman
Staci Hickman, Laboratory Manager

2020-038

Chain-of-Custody Record/Lab Work Request



Client	New Indy Catawba, SC		
Work Order Number	15730.001.003	Phone Number	834-466-227
Contact Person	Temp Simpkins	Turn Around Time	

Lab ID	Field Sample ID		Sample Collection Date	Analyses Requested/Other Info				Sample Check-off
				Analysis				
AW9062	CB 1	Run 1	0.1N H2SO4	2-18-20	HCl			
9063		Run 2						
9064		Run 3						
9065	CB 2	Run 1		2-19-20				
9066		Run 2						
9067		Run 3						
9068	CB 2	Run 4		2-20-20				
9069		Run 5						
9070		Run 6						
9071	BLACK							
AW9072	Blank	DI H2O						

Notes:

Relinquished By	Received By	Date	Time	Lab Use Only	
<i>Matthew Conell</i>	<i>Allison Christian</i>	2-21-20	15:05	Shipper	Air Bill #
				Opened By	Date/Time
				Temp °C	Condition
				Custody Seals: Yes No None N/A	

Laboratory Comments:

LAB JOB NO: 2020-038
 SAMPLE TEMP: Ambient



MERCURY

No	Description	M, mg	C, ng/g	Area	Maximum	Time
1	Std_100	1	103 ✓	8700	677	10:30:03 AM
2	Std_250	1	249 ✓	20900	2110	10:32:43 AM
3	Std_25	1	24	2140	258	10:42:34 AM
4	Std_50	1	48	4100	419	10:44:38 AM
5	Std_10	1	10 ✓	916	84	10:57:23 AM
6	ICV_100	1	104	8840	883	11:05:55 AM
7	OLC087155 BH	1	0.8 ✓	148	19	1:12:50 PM
8	OLC087155 FH	1	55 ✓	4680	466	1:16:11 PM
9	OLC067137 BH	1	0.6 ✓	136	12	1:19:05 PM
10	OLC067137 FH	1	79	6750	545	1:22:58 PM
11	OLC087106BH	1	1 ✓	162	5	3:17:02 PM
12	OLC087106FH	1	37 ✓	3190	235	3:19:28 PM
13	OLC067175BH	1	0.8	150	9	3:30:50 PM
14	OLC067175FH	1	63	5400	488	3:33:21 PM
15	CCVS_100	1	103 ✓	8720	746	3:45:50 PM
16	OL319580BH	1	2.2 ✓	263	14	5:01:34 PM
17	OL319580FH	1	39	3360	257	5:04:13 PM
18	OLC067215BH	1	0.8	149	9	5:12:09 PM
19	OLC067215FH	1	65 ✓	5530	302	5:14:41 PM
20	CCVS_100	1	106	8990	847	5:21:03 PM

No	Description	M, mg	C, ng/g	Area	Maximum	Time
1	Std__10	1	10 ✓	1070	139	9:48:42 AM
2	Std__250	1	249	21600	2430	9:50:38 AM
3	Std__25	1	24 ✓	2280	269	9:55:22 AM
4	Std__100	1	100 ✓	8760	656	9:57:44 AM
5	Std__50	1	49	4450	288	9:59:59 AM
6	ICV_100	1	97	8510	865	10:16:01 AM
7	OLC087371BH	1	0.7	238	10	12:11:14 PM
8	OLC087371FH	1	30 ✓	2750	246	12:13:24 PM
9	OLC067060BH	1	0.7 ✓	233	4	12:20:50 PM
10	OLC067060FH	1	55	4930	384	12:22:54 PM
11	OL319745BH	1	1.1 ✓	270	12	4:17:49 PM
12	OL319745FH	1	21	2040	209	4:23:14 PM
13	OL521136BH	1	2.4 ✓	378	10	4:25:45 PM
14	OL521136FH	1	44	4020	313	4:28:45 PM
15	CCVS_100	1	98 ✓	8610	894	4:36:32 PM
16	OL435957BH	1	0.6 ✓	228	10	6:04:15 PM
17	OL435957FH	1	17 ✓	1640	167	6:06:30 PM
18	OLC067142BH	1	0.9 ✓	255	12	6:11:48 PM
19	OLC06714FH	1	41	3770	259	6:15:03 PM
20	CCVS_100	1	99 ✓	8700	872	6:22:32 PM

No	Description	M, mg	C, ng/g	Area	Maximum	Time
1	Std__10	1	10 ✓	1220	98	9:33:19 AM
2	Std__250	1	250 ✓	22400	1820	9:36:09 AM
3	Std__25	1	25	2570	257	9:41:20 AM
4	Std__100	1	98 ✓	9000	668	9:44:56 AM
5	Std__50	1	50 ✓	4750	485	9:48:37 AM
6	ICV_100	1	102 ✓	9350	1240	10:00:14 AM
7	OL405053BH	1	0.6 ✓	370	7	1:09:22 PM
8	OL405053FH	1	7 ✓	939	67	1:11:05 PM
9	OL521181BH	1	1.1 ✓	413	11	1:16:31 PM
10	OL521181FH	1	31 ✓	3080	209	1:19:33 PM
11	OLC102081BH	1	1 ✓	411	13	3:02:19 PM
12	OLC102081FH	1	11	1370	142	3:04:16 PM
13	OL546120BH	1	0.4 ✓	358	4	3:14:02 PM
14	OL546120FH	1	38	3750	224	3:16:12 PM
15	CCVS_100	1	102 ✓	9320	1190	3:23:31 PM
16	OLC101774BH	1	0.6 ✓	368	6	4:24:51 PM
17	OLC101774FH	1	13	1540	111	4:28:07 PM
18	OL546117BH	1	0.7 ✓	383	7	4:31:52 PM
19	OL546117FH	1	37 ✓	3600	267	4:33:50 PM
20	CCVS_100	1	98 ✓	8990	1300	4:40:35 PM



APPENDIX F QUALITY CONTROL DATA



EQUIPMENT CALIBRATIONS

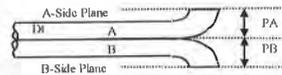
S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P279 Length 5' Probe ID.No. AUB-PR-5T

If all Criteria PASS Cp is equal to 0.84

Inspection Date 1/21/2020 Individual Conducting Inspection HG

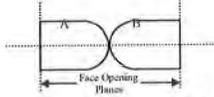
PASS/FAIL



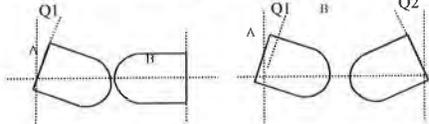
Distance to A Plane (PA) - inches 0.456 PASS
Distance to B Plane (PB) - inches 0.456 PASS
Pitot OD (D_i) - inches 0.375

$1.05 D_i < P < 1.5 D_i$

PA must Equal PB

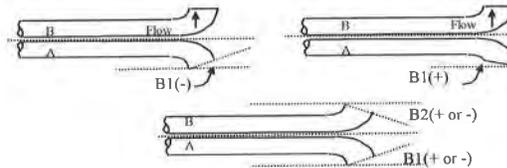


Are Open Faces Aligned Perpendicular to the Tube Axis YES NO PASS



Angle of Q1 from vertical A Tube - degrees (absolute) 1 PASS
Angle of Q2 from vertical B Tube - degrees (absolute) 1 PASS

Q1 and Q2 must be $\leq 10^\circ$

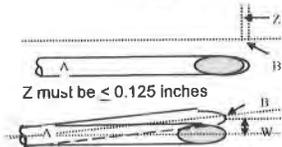


Angle of B1 from vertical A Tube - degrees (absolute) 1 PASS
Angle of B1 from vertical B Tube - degrees (absolute) 1 PASS

B1 or B2 must be $\leq 5^\circ$

Y = 1 O = 0

A = 0.912

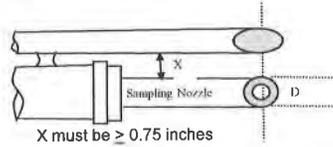


Z must be ≤ 0.125 inches

Z = A sin Y = 0.0159 PASS

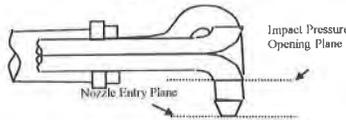
W must be ≤ 0.03125 inches

W = A sin O = 0.0000 PASS

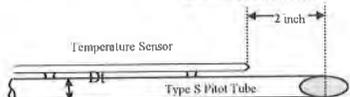


Distance between Sample Nozzle and Pitot (X) - inches 1.50 PASS

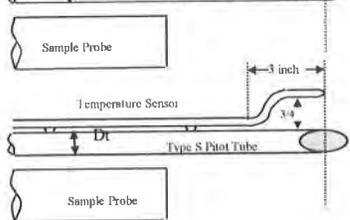
X must be ≥ 0.75 inches



Impact Pressure Opening Plane is above the Nozzle Entry Plane YES NO NA PASS



Thermocouple meets the Distance Criteria in the adjacent figure YES NO NA



Thermocouple meets the Distance Criteria in the adjacent figure YES NO NA PASS

POSTTEST CHECK

Client NI Catawba Work Order Number 15730.001.003
Date 3-7-20 Damage Found? YES NO
Checked By JUA



Stack Temperature Sensor Calibration Data

Choose Reference Thermometer Below:

- Digital Thermometer - Omega Model CL3515R (Serial# 06000183)
- Digital Thermometer - Omega Model CL3515R (Serial# 10000046)

Thermocouple Number: AUB-PR-5T Length: 5'
 Date: 21-Jan-20
 Ambient Temperature, °F: 32
 Calibrator: HG

Reference Point Number	Reference Temperature °F	Thermocouple Temperature °F	Temperature Difference %
1 - A	32	32	0.00
B	32	32	0.00
C	32	32	0.00
2 - A	71	71	0.00
B	71	71	0.00
C	71	71	0.00
3 - A	201	201	0.00
B	201	201	0.00
C	201	201	0.00

$$\text{Temp Diff (\%)} = \frac{(\text{Ref Temp, } ^\circ\text{F} + 460) - (\text{Therm Temp } ^\circ\text{F} + 460)}{\text{Ref Temp, } ^\circ\text{F} + 460} \times 100$$

Are all temperature differences less than +/- 1.5% ? YES

POSTTEST STACK TEMPERATURE SENSOR CALIBRATION DATA

Client: NI Catawba
 Work Order Number: 15730.001.003
 Date: 3-7-20
 Calibrator: JLA

Ambient Temp, °F	Reference Temp, °F	Thermocouple Temp, °F	Temperature Diff, %
<u>65</u>	<u>65</u>	<u>65</u>	<u>0</u>

Was a pretest temperature correction used? no / yes
 Is temperature difference within +/- 1.5% yes / no
 If no, calculations done once with recorded values and once with corrected values _____

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



- 1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
- 2) Record barometric pressure before and after calibration procedure.
- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
- 4) Record readings in colored boxes below, other columns are automatically calculated.

DATE: **7/19/19** METER SERIAL #: **965587** INITIAL: **29.23** FINAL AVG (P_{bar}): **29.23**

METER PART #: **AO18** CRITICAL ORIFICE SET SERIAL #: **1331s & 1825** BAROMETRIC PRESSURE (in Hg): **JAW**

Calibrated by:

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT ³)		AMBIENT F°		DGM F°		ELAPSED TIME (MIN)	DGM ΔH (in H ₂ O)	(1) V _m (STD)	(2) V _{cr} (STD)	(3) Y	(4) ΔH _g
				INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL						
8	1	0.2313	25	791.880	805.599	72	72	71	72	46	0.24	13.325	13.488	1.012	1.527
12	2	0.3277	23	779.135	791.880	73	73	72	73	30	0.51	12.364	12.451	1.007	1.618
16	3	0.4349	22	750.259	763.265	73	74	73	74	23	0.92	12.806	12.668	1.005	1.658
19	4	0.5142	21	763.265	779.135	72	73	73	73	24	1.20	15.408	15.644	1.015	1.548
25	5	0.6742	19	713.619	750.259	73	73	74	74	42	2.20	35.629	35.862	1.007	1.660
31	6	0.8108	17	695.900	713.619	73	72	73	73	17	3.20	17.305	17.456	1.009	1.681
												AVG =		1.009	1.615

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

$$(1) V_m (std) = K_1 V_m \frac{P_{bar} + (\Delta H/13.6)}{T_m} = \text{Net volume of gas sample passed through DGM, corrected to standard conditions}$$

$$K_1 = 17.64 \text{ } ^\circ\text{R/in. Hg (English), } 0.3858 \text{ } ^\circ\text{K/mm Hg (Metric)}$$

$$T_m = \text{Absolute DGM avg. temperature (} ^\circ\text{R - English, } ^\circ\text{K - Metric)}$$

$$(2) V_{cr} (std) = K' \sqrt{\frac{P_{bar} \theta}{T_{amb}}} = \text{Volume of gas sample passed through the critical orifice, corrected to standard conditions}$$

$$T_{amb} = \text{Absolute ambient temperature (} ^\circ\text{R - English, } ^\circ\text{K - Metric)}$$

$$K' = \text{Average K' factor from Critical Orifice Calibration}$$

$$Y = \frac{V_{cr} (std)}{V_m (std)} = \text{DGM calibration factor}$$

$$(4) \Delta H_g = \frac{\Delta H \cdot 0.0319 \cdot T_m \cdot e^2}{P_{bar} \cdot Y^2 \cdot V_m}$$

Individual Y's .02 from average?

PASS

Individual ΔH_g values 0.15 from average?

PASS

Average Y value +/- .02 of 1.000?

PASS

Next Calibration Due By: **7/19/2020**

Long Cal Datasheet for VOST Dry Gas Meter Console

Calibrator LoF Meter Box Number AOV15A Ambient Temp 77 Thermocouple Simulator
 Date 30-Apr-19 Wet Test Meter Number 14ah10 Temp Reference Source (Accuracy +/- 1°F)
 Dry Gas Meter Number 20194769 Baro Press, in Hg (Pb) 29.54

Liters per minute	Setting		Gas Volume				Temperatures				Results
	Roto-meter	Meter Pressure in H ₂ O	Wet Test Meter		Dry gas Meter		Wet Test Meter		Dry Gas Meter		
			liters (Vw)	liters (Vd)	°F (Tw)	Outlet, °F (Tdo)	Inlet, °F (Tdi)	Average, °F (Td)	Time, min (O)		
0.52	0.5	0.50	0.000	0.000	76.0	79.00	79.00	79.0	15.0	1.0055	
			8.025	8.016		79.00	79.00				
			8.025	8.016		79.00	79.00				
0.97	1.0	0.80	0.000	0.000	75.0	76.00	76.00	77.5	15.0	1.0029	
			14.935	14.932		79.00	79.00				
			14.935	14.932		77.50	77.50				
1.50	1.5	1.10	0.000	0.000	75.0	75.00	75.00	75.5	15.0	0.9935	
			23.040	23.148		76.00	76.00				
			23.040	23.148		75.50	75.50				
1.95	2.0	1.50	0.000	0.000	74.0	73.00	73.00	74.0	15.0	0.9937	
			30.000	30.079		75.00	75.00				
			30.000	30.079		74.00	74.00				
Average											
0.9989											

Vw - Gas Volume passing through the wet test meter
 Vd - Gas Volume passing through the dry gas meter
 Tw - Temp of gas in the wet test meter
 Tdi - Temp of the inlet gas of the dry gas meter
 Tdo - Temp of the outlet gas of the dry gas meter
 Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run
 Pb - Barometric Pressure
 ΔH - Pressure differential across orifice
 Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * [Pb + \frac{(\Delta H)}{13.6}] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$



Next Calibration Due By: **4/30/2020**

Post Test Wet Test Meter Calibration Datasheet for VOST Dry Gas Meter Console

Calibrator - JLA Meter Box Number AOV15A Client NI Catawba
 Date 3/7/2020 Wet Test Meter Number 14AH10 Location/Plant Catawba, SC
 Baro. Press. In. Hg (Pb) 29.44 Dry Gas Meter Number 20194769 PreTest Y 0.9989

Liters per minute	Setting		Gas Volume		Temperatures				Time, min (O)	Results
	Roto-meter	Meter Pressure in H ₂ O	Wet Test Meter	Dry gas Meter	Wet Test Meter	Dry Gas Meter	Average, °F (Td)			
#DIV/0!			liters (Vw)	liters (Vd)	°F (Tw)	Outlet, °F (Tdo)	Inlet, °F (Tdi)	Average, °F (Td)		Y
1.02	1.00	0.50	0.000	0.000	72.0	0.0	0.0	0.0	24.0	0.9948
#DIV/0!			0.000	0.000		0.0	0.0	0.0	Average	0.9948
			0.000	0.000		0.0	0.0	0.0	% Difference	0.4107

% Difference tolerance for Y is < 5.00
 Vw - Gas Volume passing through the wet test meter
 Vd - Gas Volume passing through the dry gas meter
 Tw - Temp of gas in the wet test meter
 Tdi - Temp of the inlet gas of the dry gas meter
 Tdo - Temp of the outlet gas of the dry gas meter
 Td - Average temp of the gas in the dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * [Pb + \frac{(\Delta H)}{13.6}] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} * \left[\frac{(tw + 460) * O}{Vw} \right]^2 \right]$$

No Long Calibration Required



Long Cal Datasheet for VOST Dry Gas Meter Console

Calibrator LoF Meter Box Number AOV15B Ambient Temp 73
 Date 1-May-19 Wet Test Meter Number 14ah10 Temp Reference Source Thermocouple Simulator
 Dry Gas Meter Number 20194348 Baro Press, in Hg (Pb) 29.51
 (Accuracy +/- 1°F)

Liters per minute	Setting		Gas Volume		Temperatures				Results	
	Roto-meter	Meter Pressure in H ₂ O	Wet Test Meter		Wet Test Meter °F (Tw)	Dry Gas Meter		Time, min (O)		
			liters (Vw)	liters (Vd)		Outlet, °F (Tdo)	Inlet, °F (Tdi)			Average, °F (Td)
0.63	0.5	0.40	0.000	0.000	74.0	74.00	74.00	74.5	30.0	0.9998
			19.475	19.477		75.00	75.00			
			19.475	19.477		74.50	74.50			
1.02	1.0	0.50	0.000	0.000	74.0	74.00	74.00	74.0	21.0	0.9920
			22.065	22.216		74.00	74.00			
			22.065	22.216		74.00	74.00			
1.55	1.5	0.70	0.000	0.000	75.0	73.00	73.00	73.5	17.0	0.9919
			27.075	27.171		74.00	74.00			
			27.075	27.171		73.50	73.50			
2.03	2.0	1.00	0.000	0.000	75.0	72.00	72.00	72.5	16.0	0.9930
			33.300	33.296		73.00	73.00			
			33.300	33.296		72.50	72.50			
								Average		0.9942

Vw - Gas Volume passing through the wet test meter
 Vd - Gas Volume passing through the dry gas meter
 Tw - Temp of gas in the wet test meter
 Tdi - Temp of the inlet gas of the dry gas meter
 Tdo - Temp of the outlet gas of the dry gas meter
 Td - Average temp of the gas in the dry gas meter

O - Time of calibration run
 Pb - Barometric Pressure
 ΔH - Pressure differential across orifice

Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * [Pb + \frac{(\Delta H)}{13.6}] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$



Next Calibration Due By: **5/1/2020**

Post Test Wet Test Meter Calibration Datasheet for VOST Dry Gas Meter Console

Calibrator JLA Meter Box Number AOV15B Client NI Catawba
 Date 3/7/2020 Wet Test Meter Number 14AH10 Location/Plant Catawba, SC
 Baro. Press. In. Hg (Pb) 29.44 Dry Gas Meter Number 20194348 PreTest Y 0.9942

Liters per minute	Setting		Temperatures				Results			
	Roto-meter	Meter Pressure in H ₂ O	Wet Test Meter	Gas Volume	Wet Test Meter	Dry Gas Meter				
			liters (Vw)	liters (Vd)	°F (Tw)	Outlet, °F (Tdo)	Inlet, °F (Tdi)	Average, °F (Td)	Time, min (O)	
#DIV/0!			0.000	0.000		0.0	0.0	0.0		#DIV/0!
0.98	1.00	0.50	0.000	0.000	72.0	73.0	73.0	73.0	25.0	0.9944
#DIV/0!			25.000	25.156		73.0	73.0	0.0		#DIV/0!
			25.000	25.156						
			0.000	0.000		0.0	0.0	0.0		Average
										% Difference

% Difference tolerance for Y is < 5.00

Vw - Gas Volume passing through the wet test meter
 Vd - Gas Volume passing through the dry gas meter
 Tw - Temp of gas in the wet test meter
 Tdi - Temp of the inlet gas of the dry gas meter
 Tdo - Temp of the outlet gas of the dry gas meter
 Td - Average temp of the gas in the dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * [Pb + \frac{(\Delta H)}{13.6}] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$

O - Time of calibration run
 Pb - Barometric Pressure
 ΔH - Pressure differential across orifice
 Y - Ratio of accuracy of wet test meter to dry gas meter

No Long Calibration Required





CALIBRATION GAS CERTIFICATES

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI80E15A0138	Reference Number:	122-401509029-1
Cylinder Number:	SG9152789BAL	Cylinder Volume:	150.9 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22019	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	May 28, 2019

Expiration Date: May 28, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	10.01 %	G1	+/- 0.6% NIST Traceable	05/28/2019
OXYGEN	10.00 %	9.984 %	G1	+/- 0.4% NIST Traceable	05/28/2019
NITROGEN	Balance			-	

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08010610	K005088	13.94 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 30, 2024
NTRM	09060212	CC262381	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 05, 2024

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	May 15, 2019
Horiba MPA510 O2 41499150042	Paramagnetic	May 15, 2019

Triad Data Available Upon Request



Signature on file
Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI60E15A0286	Reference Number:	122-124594145-1
Cylinder Number:	CC252945	Cylinder Volume:	159.6 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22016	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Dec 20, 2016

Expiration Date: Dec 20, 2024

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	20.00 %	20.22 %	G1	+/- 0.6% NIST Traceable	12/20/2016
OXYGEN	20.00 %	19.99 %	G1	+/- 0.3% NIST Traceable	12/20/2016
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061551	CC354889	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 27, 2018
NTRM	12062003	CC367399	22.883 % OXYGEN/NITROGEN	+/- 0.2%	Apr 24, 2018

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Dec 07, 2016
Horiba MPA510 O2 41499150042	Paramagnetic	Dec 07, 2016

Triad Data Available Upon Request



Signature on file
Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A1173	Reference Number:	122-124619184-1
Cylinder Number:	CC177948	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22017	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	May 19, 2017

Expiration Date: May 19, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	1250 PPM	1274 PPM	G1	+/- 0.7% NIST Traceable	05/19/2017
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12060736	CC356024	2498 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Dec 21, 2017

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO RS2EGL6K	Nondispersive Infrared (NDIR)	May 17, 2017

Triad Data Available Upon Request



Signature on file
Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0138	Reference Number:	122-124526696-1
Cylinder Number:	CC426172	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22015	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	Nov 30, 2015

Expiration Date: Nov 30, 2023

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	2500 PPM	2517 PPM	G1	+/- 0.7% NIST Traceable	11/30/2015
NITROGEN	Balance			-	

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12060702	CC356023	2498 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Dec 21, 2017

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO RS2EGL6K	Nondispersive Infrared (NDIR)	Nov 13, 2015

Triad Data Available Upon Request



Signature on file
Approved for Release



MERCURY CALIBRATION DATA

CB 1 Calibration Data					
Date	Time	Actual Mass	Response	Calculated Mass	% Difference
18-Feb-20	10:57 ✓	10 ✓	916 ✓	10.0	-0.22
18-Feb-20	10:42 ✓	25 ✓	2140 ✓	24.6	-1.49
18-Feb-20	10:44 ✓	50 ✓	4100 ✓	48.1	-3.83
18-Feb-20	10:30 ✓	100 ✓	8700 ✓	103.1	3.14
18-Feb-20	10:32 ✓	250 ✓	20900 ✓	249.2	-0.33
			slope=	83.55	
			intercept=	82.32	
			r ² =	0.99962	
OL-931-MDL.60					
P2-MEB678302					
N2-MEB670223					
N2-HG670218					
M2-HG664152					

ICV Data				
Date	Time	Known	Measured	% Difference
18-Feb-20	11:05 ✓	100 ✓	104 ✓	4.00

CCVS Data				
Date	Time	Known	Measured	% Difference
18-Feb-20	15:45 ✓	100 ✓	103 ✓	3.0
18-Feb-20	17:21 ✓	100 ✓	106 ✓	6.0

AB ✓

CB2 Calibration Data					
Date	Time	Actual Mass	Response	Calculated Mass	% Difference
19-Feb-20	9:48 ✓	10 ✓	1070 ✓	10.4	4.30
19-Feb-20	9:55 ✓	25 ✓	2280 ✓	24.5	-1.80
19-Feb-20	9:59 ✓	50 ✓	4450 ✓	49.9	-0.26
19-Feb-20	9:57 ✓	100 ✓	8760 ✓	100.2	0.16
19-Feb-20	9:50 ✓	250 ✓	21600 ✓	250.0	0.00
			slope=	85.70	
			intercept=	176.18	
			r ² =	0.99999	
OL-931-MDL.60					
P2-MEB678302					
N2-MEB670223					
N2-HG670218					
M2-HG664152					

ICV Data				
Date	Time	Known	Measured	% Difference
19-Feb-20	10:16 ✓	100 ✓	97 ✓	-3.00

CCVS Data				
Date	Time	Known	Measured	% Difference
19-Feb-20	16:36 ✓	100 ✓	98 ✓	-2.0
19-Feb-20	18:22 ✓	100 ✓	99 ✓	-1.0

Am

CB2 Calibration Data					
Date	Time	Actual Mass	Response	Calculated Mass	% Difference
20-Feb-20	9:33 ✓	10 ✓	1220 ✓	10.2	2.23
20-Feb-20	9:41 ✓	25 ✓	2570 ✓	25.5	2.15
20-Feb-20	9:48 ✓	50 ✓	4750 ✓	50.3	0.54
20-Feb-20	9:44 ✓	100 ✓	9000 ✓	98.5	-1.52
20-Feb-20	9:36 ✓	250 ✓	22400 ✓	250.5	0.20
			slope=	88.15	
			intercept=	318.84	
			r ² =	0.99992	
OL-931-MDL.60					
P2-MEB678302					
N2-MEB670223					
N2-HG670218					
M2-HG664152					

ICV Data				
Date	Time	Known	Measured	% Difference
20-Feb-20	10:00 ✓	100 ✓	102 ✓	2.00

CCVS Data				
Date	Time	Known	Measured	% Difference
20-Feb-20	15:23 ✓	100 ✓	102 ✓	2.0
20-Feb-20	16:40 ✓	100 ✓	98 ✓	-2.0

AM ✓



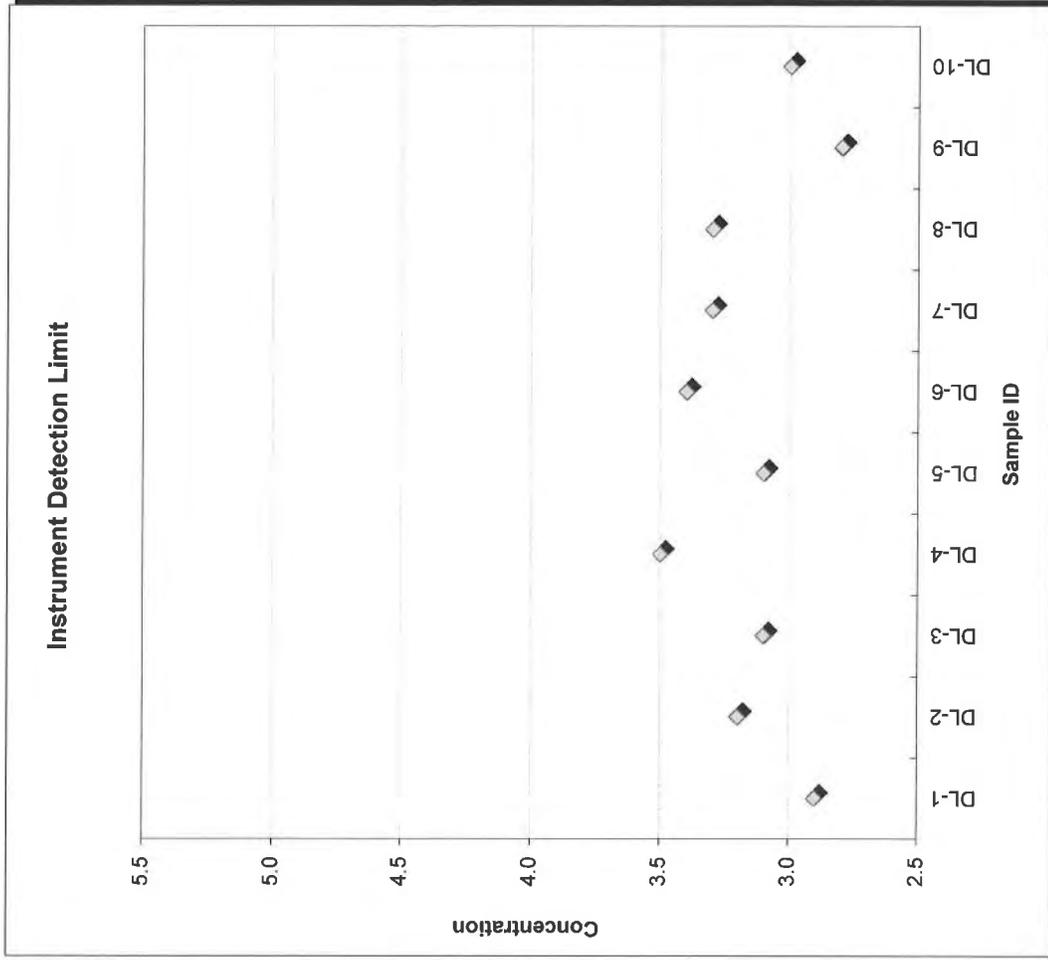
MERCURY MDL STUDY

Detection Limit Study

For Mercury per EPA Method 30B using OHIO Lumex AA Spectrometer

Instrument I	: Ohio Lumex - M915+ -931
Sample Prepared By	: S. Hickman
Date Prepared	: 11/1/2017
Analyst	: S. Hickman
Date Analyzed	: 11/1/2017
t-factor (99% C.I.)	: 2.764
N_i	: 1
N_b	: 10
$(N_i + N_b) / (N_i N_b)$: 1.1
$[(N_i + N_b) / (N_i N_b)]^{1/N_i}$: 1.0
Average Mercury (ng)	: 3.16
S (ng)	: 0.2221
Instrument Detection Limit (ng)	: 0.6

LAB ID	Mercury (ng)
DL-1	2.9
DL-2	3.2
DL-3	3.1
DL-4	3.5
DL-5	3.1
DL-6	3.4
DL-7	3.3
DL-8	3.3
DL-9	2.8
DL-10	3.0





CYCLONIC FLOW CHECKS

Determination of Stack Gas Velocity - Method 2

Client New Indy Source Combo. Boiler Pitot Coeff (C_p) 0.84
 Location/Plant Catawba, SC W.O. Number 15730.001.003 Stack Area (A_s), ft² 78.54
 Operator AK Date 2/18/20 Pitot Tube/Thermo ID _____

Run Number	1	2	3
Time	9:06		
Barometric Press (P _{bar}), in Hg*	29.5		
Static Press (P _g), in H ₂ O	-.81		
Source Moisture (B _{ws}), %	19		
O ₂ , %	6.8		
CO ₂ , %	13.3		

Cyclonic Flow Determination		Traverse Location		Leak Check good ?		Leak Check good ?		Leak Check good ?	
				Y / N		Y / N		Y / N	
Δp at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
0	0	A	1	.80	391				
0	0		2	.86	391				
0	0		3	.85	391				
0	4		4	.76	390				
0	0		5	.32	384				
0	3		6	.24	382				
.02	5	B	1	.56	388				
.02	6		2	.47	388				
.03	6		3	.38	388				
0	5		4	.32	389				
0	4		5	.25	388				
0	4		6	.20	380				
.02	0	C	1	.78	390				
0	0		2	.44	391				
0	3		3	.85	390				
0	3		4	.78	388				
.03	4		5	.35	385				
.02	3		6	.26	385				
0	4	D	1	.57	387				
0	4		2	.48	388				
0	5		3	.46	387				
0	4		4	.31	387				
.01	3		5	.26	386				
0	4		6	.21	386				
Avg Angle		Avg Δp & Temp		.5041	387.70				
		Avg √Δp		.6894					
		Average gas stream velocity, ft/sec.							
		Vol. flow rate at actual conditions, acf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - \%O_2 - \%CO_2)$$

$$M_w = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abs)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_w))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{std} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$$

where:
 M_d = Dry molecular weight source gas, lb/lb-mole.
 M_w = Wet molecular weight source gas, lb/lb-mole.
 T_{s(abs)} = Source Temperature, absolute (°R)
 P_s = Absolute stack static pressure, inches Hg.
 V_s = Average gas stream velocity, ft/sec.
 Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
 Q_{std} = Volumetric flow rate of dry stack gas at standard conditions.

*Barometric Pressure is at port elevation

Comments _____

Determination of Stack Gas Velocity - Method 2

Client New Indy Source Combo. Boiler 2 Pitot Coeff (C_p) 0.84
 Location/Plant Catawba, SC W.O. Number 15730.001.003 Stack Area (A_s), ft² 78.54
 Operator AL Date 2/14/20 Pitot Tube/Thermo ID 221/218

Run Number	1	2	3
Time	8:38		
Barometric Press (P _{bar}), in Hg*	29.45		
Static Press (P _g), in H ₂ O	-0.69		
Source Moisture (B _{ws}), %	19		
O ₂ , %	6.4		
CO ₂ , %	13.3		

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Δp at θ°	Angle yielding Δp = 0	Port	Point	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F	Δp, in H ₂ O	Source Temperature (T _s), °F
0	3	A	1	.53	394				
0	3		2	.45	400				
0	4		3	.35	400				
0	5		4	.30	400				
0	4		5	.28	399				
0	2		6	.29	398				
0	2	B	1	.77	394				
.01	2		2	.80	396				
.01	1		3	.80	397				
.02	0		4	.74	398				
.02	0		5	.64	399				
0	1		6	.55	398				
0	3	C	1	.54	399				
0	4		2	.46	398				
0	4		3	.36	398				
0	5		4	.32	398				
.02	4		5	.30	400				
.01	3		6	.29	400				
.01	5	D	1	.78	394				
0	4		2	.80	399				
0	2		3	.79	399				
0	2		4	.75	397				
0	1		5	.62	398				
0	2		6	.53	396				
Avg Angle		Avg Δp & Temp		.5441	398.41				
		Avg √Δp		.7251					
Average gas stream velocity, ft/sec.									
Vol. flow rate at actual conditions, acf/min									
Vol. flow rate at standard conditions, dscf/min									

$$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - \%O_2 - \%CO_2)$$

$$M_w = M_d \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$$

$$T_{s(abe)} = T_s + 460$$

$$P_s = P_{bar} + P_g / 13.6$$

$$V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg} \times (T_{s(abe)} / (P_s \times M_w))}$$

$$Q_{act} = 60 \times V_s \times A_s$$

$$Q_{std} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abe)}$$

where:

M_d = Dry molecular weight source gas, lb/lb-mole.
 M_w = Wet molecular weight source gas, lb/lb-mole.
 T_{s(abe)} = Source Temperature, absolute (°R)
 P_s = Absolute stack static pressure, inches Hg.
 V_s = Average gas stream velocity, ft/sec.
 Q_{act} = Volumetric flow rate of wet stack gas at actual, wacf/min
 Q_{std} = Volumetric flow rate of dry stack gas at standard conditions.

*Barometric Pressure is at port elevation

Comments _____



STRATIFICATION CHECKS

RUN DATA

Number 99

Client: **New Indy- Catawba**
 Location: **Catawba, SC**
 Source: **CB1**

Project Number: **15730.001.003**
 Operator: **T. Simpkins**
 Date: **18 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
09:48	4265	10.1	2745	8.9	787	223
09:49	4347	10.3	2905	9.4	857	245
09:50	4412	10.5	2916	9.4	750	212
09:51	4265	10.1	2975	9.6	1105	322
09:52	4239	10.0	3051	9.9	1332	392
			pt 2			
09:53	4126	9.7	3111	10.1	1328	391
09:54	4178	9.9	3169	10.3	1279	376
09:55	4146	9.8	3166	10.3	1172	343
09:56	4095	9.6	3205	10.4	1247	366
09:58	4198	9.9	3233	10.5	1450	429
			pt 3			
10:02	4444	10.6	2937	9.5	1116	325
10:03	4386	10.4	2967	9.6	1082	315
10:04	4338	10.3	3015	9.8	972	281
10:05	4302	10.2	3029	9.8	977	282
10:06	4198	9.9	3058	9.9	1214	356
Avg	4263	10.1	3032	9.8	1111	324

RUN DATA

Number 99

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Time	O ₂		CO ₂		CO	
	mv	%	mv	%	mv	ppm
pt 1						
08:20	3317	7.7	3944	12.3	1570	467
08:21	3463	8.1	3944	12.3	1475	438
08:22	3726	8.8	3800	11.9	1199	355
08:23	3889	9.2	3668	11.4	1211	359
08:24	3943	9.4	3580	11.2	1351	401
pt 2						
08:25	3804	9.0	3606	11.2	1775	528
08:26	4038	9.6	3577	11.1	1795	534
08:27	4388	10.5	3337	10.4	1517	451
08:28	4139	9.9	3319	10.3	1413	419
08:29	3939	9.4	3455	10.7	1204	357
pt 3						
08:30	4021	9.6	3493	10.9	1188	352
08:31	4145	9.9	3428	10.7	1364	405
08:32	4118	9.8	3396	10.6	1381	410
08:33	3766	8.9	3522	11.0	1197	354
08:34	3484	8.2	3752	11.7	1175	348
Avg	3879	9.2	3588	11.2	1388	412

$\frac{11.2}{11.7} = .96$
 $\frac{10.7}{11.2} = .96$
 not stratified



RESPONSE TIME CHECKS

BIAS

Number 1

15730.001.003
#1 & #2 CB
NESMAP BM
Compliance

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB1**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **18 Feb 2020**

Calibration 1

Start Time: 09:36

O₂
Method: EPA 3A
Span Conc. 20.0 %

Bias Results							<i>Response time (SEC)</i>
Standard	Cal.	Response	Bias	Difference	Error	Status	
Gas	%	mv	%	%	%		
Zero	-0.1	444	0.0	0.1	0.5	Pass	<i>100</i>
Span	10.2	4205	9.9	-0.3	-1.5	Pass	<i>100</i>

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results							
Standard	Cal.	Response	Bias	Difference	Error	Status	
Gas	%	mv	%	%	%		
Zero	0.1	196	0.3	0.2	1.0	Pass	<i>100</i>
Span	9.7	3013	9.8	0.1	0.5	Pass	<i>100</i>

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results							
Standard	Cal.	Response	Bias	Difference	Error	Status	
Gas	ppm	mv	ppm	ppm	%		
Zero	-13	25	-13	0	0.0	Pass	<i>80</i>
Span	1301	4177	1274	-27	-1.1	Pass	<i>90</i>

BIAS
Number 1

Client: **New Indy- Catawba**
Location: **Catawba, SC**
Source: **CB2**

Project Number: **15730.001.003**
Operator: **T. Simpkins**
Date: **19 Feb 2020**

Calibration 1

Start Time: 08:05

O₂
Method: EPA 3A
Span Conc. 20.0 %

*Response
Time
(500)*

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.0	371	0.0	0.0	0.0 ✓	Pass 100
Span	10.0	4196	10.0	0.0	0.0 ✓	Pass 800

CO₂
Method: EPA 3A
Span Conc. 20.2 %

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	%	mv	%	%	%	
Zero	0.1	209	0.1	0.0	0.0 ✓	Pass 100
Span	9.8	3166	9.8	0.0	0.0 ✓	Pass 100

CO
Method: EPA 10
Span Conc. 2517 ppm

Bias Results						
Standard	Cal.	Response	Bias	Difference	Error	Status
Gas	ppm	mv	ppm	ppm	%	
Zero	0	27	3	3	0.1 ✓	Pass 80
Span	1273	4265	1276	3	0.1 ✓	Pass 80

✓



INTERFERENCE CHECKS



Method 7E-Interference Response

Applies to Models: 600 Series NDIR/PMD, 100/200/300 Series NDIR/PMD, ZRE w/PMD
 Date of Test: 1/26/2011
 Analyzer Type: PMD
 Model: 602-P
 Serial Number: U09018-M
 Calibration Span: 20.7% O₂, balance N₂

Test Gas	Interferent Concentration	Zero Response	Span Response	Interferent Response
SO ₂	513 ppm	0.000%	0.020%	0.020%
H ₂ O	0.82%	0.015%	0.020%	0.020%
N ₂ O	10.00 ppm	0.000%	0.000%	0.000%
NO	94.9 ppm	0.000%	0.000%	0.000%
NO ₂	99.8 ppm	0.000%	0.000%	0.000%
CO	900 ppm	0.000%	0.000%	0.000%
CH ₄	90.9 ppm	0.000%	0.000%	0.000%
HCl	27.99ppm	0.000%	0.000%	0.000%
Sum of Responses				0.004%
% of Calibration Span				0.019%



Method 7E-Interference Response

Applies to Models: 600 Series NDIR, 100/200/300 Series NDIR, ZRE
 Date of Test: 1/26/2011
 Analyzer Type: NDIR
 Model: 602-P
 Serial Number: U09018-M
 Calibration Span: 20.2% CO2/Balance N2

Test Gas	Interfernt Concentration	Zero Response	Span Response	Interferent Response
SO2	102.6 ppm	0.000%	0.000%	0.000%
H2O	0.82%	0.055%	0.055%	0.055%
N2O	10.00 ppm	0.005%	0.010%	0.010%
NO	94.9 ppm	0.005%	0.025%	0.025%
NO2	99.8 ppm	0.010%	0.010%	0.010%
CO	100.0 ppm	0.010%	0.010%	0.010%
CH4	101.0 ppm	0.010%	0.010%	0.010%
HCl	27.99ppm	0.010%	0.010%	0.010%
Sum of Responses				0.013%
% of Calibration Span				0.064%



August 4, 2014

To Whom It May Concern:

Teledyne Advanced Pollution Instrumentation has introduced new instrument models to replace our existing E Series gas analyzers. The new instruments are collectively referred to as our T Series models.

The fundamental design and all critical wetted, electronic, electrical and analytical components of the T Series instruments are identical to the E Series, including: UV sources, photo detectors, power supplies, pressure and flow transducers, pneumatic connectors and valves as well as external signal I/O connectors for serial data (RS-232/485 and Ethernet), analog concentration and status signals, and control inputs.

The design of all analytical algorithms, signal processing and control software algorithms are identical as well, including A/D measurements, digital signal filtering, concentration calculations, calibration factors and algorithms, temperature and pressure compensation, temperature control loops.

The primary differences between the models E Series and T Series instrument designs are provided below:

1. The 2 line by 40 character vacuum fluorescent display module is replaced by a 7" color LCD display with a touch screen interface. The current human user interface is emulated on the color, graphical display. The touch screen is used to emulate the existing 8 button context sensitive keyboard.
2. The software platform has been upgraded to support the graphical display and touchscreen. Software routines have been added to support the new analog input option, and a native Ethernet port on the CPU.
3. An upgraded CPU board that includes hardware to drive the LCD display and is backwards compatible with the current E-series CPU is used for the T-series analyzers.
4. A new front panel assembly has been designed to house the new display, and a new 9-pin connector will be added to the rear panel to support the new analog input option.
5. The new analog input option is designed to permit users to display and log, using the analyzer's internal data logger, signals from meteorological and other miscellaneous external sensors. None of the external signals are used in the calculations that yield calibrated concentration.

Internal production testing of the T Series analyzers that have been manufactured to date has shown that they meet the same analytical specifications as the equivalent E Series analyzers, including noise, linearity, drift, and response time.

We feel that, due to the nature of the changes described above and the testing performed to date, the modifications will not affect the performance characteristics of the analyzer.

Best Regards,



Doug Haugen
US National Sales Manager
Teledyne Advanced Pollution Instrumentation
(970) 224-3686
Douglas.haugen@teledyne.com

Method 7E Results for TAPI High Level Gas Analyzers		Instrument Type									
Potential Interferent Gas	Potential Interferent Gas Concentration	M100EH	M200EM	M200EH	M200EH CO2 Sensor	M201E	M300E	M300EM	M320E	M803E O2 Sensor	M803E CO2 Sensor
SO2	20 ppmv		0.012	-0.167	-0.014	0.001	-0.058	-0.092	-0.106	-0.061	-0.015
NO	15 ppmv	0.162			0.002		-0.015	-0.054	-0.035	-0.051	-0.015
NO2	15 ppmv	0.053			-0.026		-0.059	-0.007	0.041	-0.051	-0.027
N2O	10 ppmv	-0.198	-0.033	-0.166	-0.036	0.040	0.113	-0.009		-0.041	-0.034
CO	50 ppmv	-0.084	0.022	-0.211	0.000	-0.005			-2.518	-0.164	-0.034
CH4	50 ppmv	-0.051	-0.042	-0.461	-0.043	0.037	-0.025	-0.030	-0.068	0.000	-0.015
H2	50 ppmv	-0.230	-0.035	-0.253	-0.038	0.030	-0.061	-0.128	0.000	-0.010	-0.008
CO2	15%	0.361	-2.397	-0.808		-1.076	0.470	0.313	7.843	-0.026	
NH3	10 ppmv	0.000	0.000		0.000		0.000	0.000	0.000	0.000	0.000
HCl	10 ppmv	0.047	0.168	-0.133	-0.032	0.078	-0.002	-0.087	0.073	-0.043	-0.027
H2O	1%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Absolute Sum of Responses		1.186	2.710	2.198	0.191	1.268	0.803	0.720	10.685	0.447	0.175
Calibration Span		90 ppm	90 ppm	90 ppm	15 %	18 ppm	90 ppm	90 ppm	90 ppm	20.95 %	15 %
Percent of Calibration Span		1.318	3.011	2.442	1.273	7.046	0.892	0.800	11.872	2.134	1.163



PROJECT TEAM QUALIFICATIONS

Weston Solutions, Inc. Integrated Air Services Employee Qualifications				
Name	Title/Position	Education/Training	Years of Experience	
			Total	Emission Testing
Allredge, Bryan	Emissions Testing Specialist	AAS - Electronic Engineering Tehcnology Snead State Community College (1998)	7	7
Bryant, Ashley	Report Coordinator	BS - English Ed. - Jacksonville State University (2011) MA - English - Jacksonville State University (2012)	7	7
Carroll, Matthew	Emissions Testing Specialist	AD - Forest and Wildlife Conservation Penn Foster University (2010)	4	4
Hammonds, Natalie	Quality Manager	BS - Environmental Science Auburn University (1998)	23	18
Robinson, Tyler	Emissions Testing Specialist	BA - IDSC - Natural Resource Ecology, Sustainability - AU (2017)	2	2
Simpkins, Templeton	Project Manager	BS - Zoology Auburn University (1997)	20	20
Stinson, Mason	Emissions Testing Specialist			



APPENDIX G PROCESS OPERATING/PRODUCTION DATA



No. 1 COMBINATION BOILER

New-Indy Catawba
 Catawba, SC
 No. 1 CB

F-factor
 Bark= 9600
 TDF= 10260

Fuel Feed Calculations

Run #	Heat Input			Percent Heat Input			F-Factor
	Bark	TDF	Total	Bark	TDF	Total	
	(MMBtu/hr)			(%)			
1	361.0	35.3	396.29	91.1%	8.9%	100.0%	9659
2	357.8	35.3	393.15	91.0%	9.0%	100.0%	9659
3	354.4	35.3	389.69	90.9%	9.1%	100.0%	9660
Average							9659

SK

New-Indy Catawba
 Catawba, SC
 No. 1 CB

F-factor
 Bark= 1920
 TDF= 1800

Fuel Feed Calculations

Run #	Heat Input			Percent Heat Input			F-Factor
	Bark	TDF	Total	Bark	TDF	Total	
	(MMBtu/hr)			(%)			
1	361.0	35.3	396.29	91.1%	8.9%	100.0%	1909 ✓
2	357.8	35.3	393.15	91.0%	9.0%	100.0%	1909 ✓
3	354.4	35.3	389.69	90.9%	9.1%	100.0%	1909 ✓
Average							1909 ✓

Combination Boiler No. 1 - Test 1

Start Time	2/18/2020	10:18	02/18/20 10:18
End Time	2/18/2020	11:26	02/18/20 11:26

Run #:	1	% opacity	Steam Load	Bark	TDF	Boiler Outlet O ₂	Time Soot blowing during Run min	EP Field 1		EP Field 2		EP Field 3	
								Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
Start Time	End Time	26A1148.pv	26cf142.pv	c1bf n.pv	13sc001.pv	26A1145.pv	0	26ev0125.pv	26ea0125.pv	26ev0126.pv	26ea0126.pv	26ev0127.pv	26ea0127.pv
02/18/20 10:18	2/18/20 10:24	6.5	232.9	38.7	1.1	2.8		32.8	222.7	34.3	428.1	28.0	114.9
2/18/20 10:24	2/18/20 10:30	5.9	241.8	40.9	1.1	2.6		33.4	219.7	33.8	389.9	28.1	117.6
2/18/20 10:30	2/18/20 10:36	6.4	259.5	42.2	1.1	2.4		33.0	194.8	31.2	296.0	27.9	117.8
2/18/20 10:36	2/18/20 10:42	6.4	264.7	44.8	1.1	2.4		33.6	235.8	33.2	372.3	27.8	119.6
2/18/20 10:42	2/18/20 10:48	6.4	262.6	43.7	1.1	2.2		34.3	215.6	31.6	250.6	28.2	115.7
2/18/20 10:48	2/18/20 10:54	6.4	256.8	43.3	1.1	2.3		33.3	246.2	32.2	348.1	27.6	116.2
2/18/20 10:54	2/18/20 11:00	6.3	243.5	41.2	1.1	2.0		33.9	281.3	33.0	367.5	27.6	115.6
2/18/20 11:00	2/18/20 11:06	6.5	244.8	41.0	1.1	2.2		32.6	185.5	34.4	380.7	27.6	116.9
2/18/20 11:06	2/18/20 11:12	6.7	239.9	41.1	1.1	2.7		34.3	262.4	32.8	326.3	27.6	117.8
2/18/20 11:12	2/18/20 11:18	6.7	235.4	39.1	1.1	2.8		34.0	232.9	32.2	297.6	27.4	117.3
2/18/20 11:18	2/18/20 11:24	5.7	245.1	40.9	1.1	2.8		33.8	266.9	32.8	404.6	27.7	117.3
2/18/20 11:24	2/18/20 11:30	5.3	245.7	41.1	1.1	2.6		33.8	280.3	34.7	462.0	27.6	115.6
Average		6.3	247.7	41.5	1.1	2.5		33.6	237.0	33.0	360.3	27.8	116.9

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	41.49	TPH	4350	btu / lb	360,978,070	Btu / hr	91.09%
TDF	1.14	tph	15500	btu / lb	35,313,825	Btu / hr	8.91%

Total Heat Input: 396,291,895 100.00%

Start Time	2/18/2020	12:36	02/18/20 12:36
End Time	2/18/2020	13:49	02/18/20 13:49

Run #:	2	% opacity	Steam Load	Bark	TDF	Boiler Outlet O ₂	Time Soot blowing during Run min	EP Field 1		EP Field 2		EP Field 3	
								Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
Start Time	End Time	26A1148.pv	26cf142.pv	c1bf n.pv	13sc001.pv	26A1145.pv	11	26ev0125.pv	26ea0125.pv	26ev0126.pv	26ea0126.pv	26ev0127.pv	26ea0127.pv
02/18/20 12:36	2/18/20 12:42	4.7	238.2	40.1	1.1	3.0		33.3	361.0	33.7	452.6	27.2	118.4
2/18/20 12:42	2/18/20 12:48	4.3	235.8	39.8	1.1	3.2		32.9	374.2	34.0	458.7	27.0	118.1
2/18/20 12:48	2/18/20 12:54	4.3	227.2	37.9	1.1	3.0		33.2	345.1	33.3	392.1	27.4	118.4
2/18/20 12:54	2/18/20 13:00	4.5	249.6	41.3	1.1	2.5		32.2	288.6	33.0	403.2	28.0	115.3
2/18/20 13:00	2/18/20 13:06	4.9	240.3	40.7	1.1	2.8		30.9	299.2	33.3	406.0	27.8	119.7
2/18/20 13:06	2/18/20 13:12	5.3	240.4	40.4	1.1	2.4		33.8	309.0	31.5	323.9	27.8	113.6
2/18/20 13:12	2/18/20 13:18	6.5	246.4	41.4	1.1	2.0		34.5	311.7	33.3	377.4	27.3	115.1
2/18/20 13:18	2/18/20 13:24	7.7	260.6	43.4	1.1	1.8		34.7	321.4	31.9	353.2	27.0	119.6
2/18/20 13:24	2/18/20 13:30	6.7	258.0	43.0	1.1	2.0		35.7	346.7	28.7	287.5	27.0	115.5
2/18/20 13:30	2/18/20 13:36	6.9	269.5	45.6	1.1	2.8		35.2	237.9	31.2	262.2	26.3	108.5
2/18/20 13:36	2/18/20 13:42	8.8	243.1	41.2	1.1	3.9		32.4	353.7	31.7	394.4	26.0	117.3
2/18/20 13:42	2/18/20 13:48	4.6	226.5	38.8	1.1	4.9		31.8	346.0	32.2	427.4	25.8	110.8
Average		5.8	244.6	41.1	1.1	2.8		33.4	324.5	32.3	378.2	27.1	115.9

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	41.13	TPH	4350	btu / lb	357,806,459	Btu / hr	91.01%
TDF	1.14	tph	15500	btu / lb	35,340,804	Btu / hr	8.99%

Total Heat Input: 393,147,263 100.00%

Start Time	2/18/2020	14:32	02/18/20 14:32
End Time	2/18/2020	15:41	02/18/20 15:41

Run #:	3	% opacity	Steam Load	Bark	TDF	Boiler Outlet O ₂	Time Soot blowing during Run min	EP Field 1		EP Field 2		EP Field 3	
								Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
Start Time	End Time	26A1148.pv	26cf142.pv	c1bf n.pv	13sc001.pv	26A1145.pv	0	26ev0125.pv	26ea0125.pv	26ev0126.pv	26ea0126.pv	26ev0127.pv	26ea0127.pv
02/18/20 14:32	2/18/20 14:38	4.8	213.6	36.1	1.1	4.4		30.6	271.5	33.8	463.6	28.0	117.3
2/18/20 14:38	2/18/20 14:44	4.4	227.0	38.0	1.1	3.8		30.2	264.4	33.1	455.1	28.0	115.3
2/18/20 14:44	2/18/20 14:50	4.5	238.7	40.2	1.1	3.8		30.5	243.5	32.3	337.2	28.0	115.3
2/18/20 14:50	2/18/20 14:56	4.6	225.6	37.5	1.1	4.2		31.4	268.1	33.4	433.3	27.9	116.9
2/18/20 14:56	2/18/20 15:02	5.6	248.7	42.1	1.1	3.2		31.8	191.3	33.4	383.1	27.4	116.7
2/18/20 15:02	2/18/20 15:08	5.1	247.6	40.8	1.1	2.7		32.6	244.6	33.6	438.3	27.2	119.3
2/18/20 15:08	2/18/20 15:14	4.8	250.1	42.4	1.1	3.0		31.6	203.4	33.5	406.3	27.3	117.1
2/18/20 15:14	2/18/20 15:20	5.1	252.0	42.2	1.1	2.4		33.2	258.0	32.7	384.0	27.3	117.8
2/18/20 15:20	2/18/20 15:26	5.0	256.1	42.5	1.1	2.3		32.8	279.4	33.1	302.0	27.7	119.1
2/18/20 15:26	2/18/20 15:32	4.9	254.6	43.1	1.1	2.5		32.6	259.6	34.3	437.1	27.4	118.7
2/18/20 15:32	2/18/20 15:38	4.8	247.7	41.5	1.1	2.4		32.7	234.3	34.3	443.6	27.5	118.7
2/18/20 15:38	2/18/20 15:44	4.7	255.5	42.5	1.1	2.1		31.6	249.7	32.8	392.9	27.7	113.8
Average		4.8	243.1	40.7	1.1	3.1		31.8	247.3	33.3	406.4	27.6	117.2

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	40.73	TPH	4350	btu / lb	354,369,467	Btu / hr	90.94%
TDF	1.14	tph	15500	btu / lb	35,324,080	Btu / hr	9.06%

Total Heat Input: 389,693,547 100.00%



No. 2 COMBINATION BOILER



CONDITION 1

New-Indy Catawba
 Catawba, SC
 No. 2 CB
 Condition 1

F-factor
 Bark= 9600
 TDF= 10260

Fuel Feed Calculations

Run #	Heat Input			Percent Heat Input			F-Factor
	Bark	TDF	Total	Bark	TDF	Total	
	(MMBtu/hr)			(%)			
1	435.0 ✓	35.4 ✓	470.36 ✓	92.48%	7.5%	100.0%	9650
2	428.3 ✓	34.5 ✓	462.81 ✓	92.55%	7.5%	100.0%	9649
3	369.6 ✓	35.4 ✓	405.02 ✓	91.26%	8.7%	100.0%	9658
Average							9652

AWR SHL ✓

New-Indy Catawba
 Catawba, SC
 No. 2 CB
 Condition 1

F-factor
 Bark= 1920
 TDF= 1800

Fuel Feed Calculations

Run #	Heat Input			Percent Heat Input			F-Factor
	Bark	TDF	Total	Bark	TDF	Total	
	(MMBtu/hr)			(%)			
1	435.0	35.4	470.36	92.48%	7.5%	100.0%	1911
2	428.3	34.5	462.81	92.55%	7.5%	100.0%	1911
3	369.6	35.4	405.02	91.26%	8.7%	100.0%	1910
Average							1911

134034v

CB2 - Test Condition 1 - Bark and TDF only

Start Time 2/19/20 9:11 Run paused from 09:38 - 09:52
End Time 2/19/20 10:29

Run #:	1	% opacity	Steam Load	Bark	TDF	Boiler Outlet O2	Time Soot blowing during Run	EP Field 1		EP Field 2		EP Field 3	
								Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
								kV	MA	kV	MA	kV	MA
		%	mpph	tph	tph	%	min	37ev0088.pv	37ea0088.pv	37ev0089.pv	37ea0089.pv	37ev0090.pv	37ea0090.pv
Start Time	End Time	37al293b.pv	37cf278.pv	c2bf_n.pv	13sc001.pv	37A1298.pv	0	20.5	106.3	20.5	141.5	22.2	229.7
2/19/20 9:11	2/19/20 9:17	3.7	214.4	46.3	1.1	5.2		22.8	126.8	22.6	194.6	20.8	213.4
2/19/20 9:17	2/19/20 9:23	9.9	233.2	50.8	1.1	4.1		20.7	92.8	21.6	135.2	21.1	209.2
2/19/20 9:23	2/19/20 9:29	6.1	207.9	49.0	1.1	4.4		24.0	104.2	23.7	163.8	19.9	150.0
2/19/20 9:29	2/19/20 9:35	12.8	218.9	44.3	1.1	2.8		24.7	77.8	24.9	164.0	21.1	162.8
2/19/20 9:35	2/19/20 9:38	17.8	265.9	59.6	1.1	2.5		26.9	204.0	24.2	230.9	22.5	222.7
2/19/20 9:38	2/19/20 9:58	7.4	208.0	42.5	1.1	3.8		24.5	132.5	22.8	170.2	18.9	141.4
2/19/20 9:58	2/19/20 10:04	9.2	240.5	53.0	1.1	3.7		23.8	119.9	20.9	124.1	20.6	178.8
2/19/20 10:04	2/19/20 10:10	9.2	185.7	42.1	1.1	3.9		23.7	97.2	21.9	122.9	19.8	157.2
2/19/20 10:10	2/19/20 10:16	20.1	256.6	53.5	1.1	4.2		22.9	83.7	22.3	121.1	19.7	148.5
2/19/20 10:16	2/19/20 10:22	18.9	260.4	58.9	1.1	6.2		22.4	116.3	22.0	150.9	19.9	161.8
2/19/20 10:22	2/19/20 10:28	12.4	214.3	50.0	1.1	6.1		24.2	157.8	22.7	176.0	21.1	198.4
2/19/20 10:28	2/19/20 10:34	6.3	214.1	47.1	1.1	4.7		23.4	114.7	22.5	156.3	20.6	179.6
	Average	11.6	227.8	50.0	1.1	4.3							

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	50.00	TPH	4350	btu / lb	434,976,267	Btu / hr	92.48%
TDF	1.14	tph	15500	btu / lb	35,379,959	Btu / hr	7.52%
Total Heat Input:					470,356,226		100.00%

Start Time 2/19/20 12:53 Run paused from 13:42 - 14:17
End Time 2/19/20 14:39

Run #:	2	% opacity	Steam Load	Bark	TDF	Boiler Outlet O2	Time Soot blowing during Run	EP Field 1		EP Field 2		EP Field 3	
								Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
								kV	MA	kV	MA	kV	MA
		%	mpph	tph	tph	%	min	37ev0088.pv	37ea0088.pv	37ev0089.pv	37ea0089.pv	37ev0090.pv	37ea0090.pv
Start Time	End Time	37al293b.pv	37cf278.pv	c2bf_n.pv	13sc001.pv	37A1298.pv	0	20.7	96.6	19.9	126.0	21.7	218.8
2/19/20 12:53	2/19/20 12:59	15.3	235.7	54.7	1.1	7.5		23.1	134.5	20.7	144.5	21.5	237.3
2/19/20 12:59	2/19/20 13:05	15.0	226.2	53.0	1.1	7.6		22.0	140.5	22.5	184.4	21.1	251.0
2/19/20 13:05	2/19/20 13:11	17.8	216.4	50.2	1.1	7.3		22.7	122.2	21.2	154.8	20.4	217.1
2/19/20 13:11	2/19/20 13:17	14.1	206.8	48.5	1.1	7.7		24.2	176.3	22.4	201.6	19.6	165.5
2/19/20 13:17	2/19/20 13:23	7.6	196.4	45.2	1.1	7.2		23.5	165.5	23.3	210.0	21.6	213.9
2/19/20 13:23	2/19/20 13:29	12.8	214.0	47.6	1.1	6.7		24.1	173.2	24.0	265.0	21.6	250.0
2/19/20 13:29	2/19/20 13:35	18.1	220.8	50.1	1.1	5.7		24.1	152.3	22.8	198.3	19.0	178.2
2/19/20 13:35	2/19/20 13:41	39.7	255.1	55.4	1.1	5.6		25.6	97.2	22.5	145.3	18.5	138.7
2/19/20 13:41	2/19/20 13:47	74.1	303.0	64.2	1.1	5.2		23.1	137.2	22.9	213.6	24.0	370.6
2/19/20 13:47	2/19/20 14:23	20.1	214.5	50.5	1.1	7.5		21.2	103.5	20.7	129.3	22.9	312.5
2/19/20 14:23	2/19/20 14:29	12.0	193.8	44.3	1.1	7.4		23.2	154.7	22.2	197.9	24.4	354.7
2/19/20 14:29	2/19/20 14:35	7.8	184.3	43.4	0.9	8.1		21.9	151.1	23.8	252.9	23.4	325.0
2/19/20 14:35	2/19/20 14:41	4.2	136.7	32.7	1.0	8.4		23.0	138.8	22.2	188.0	21.5	248.7
	Average	19.9	215.7	49.2	1.1	7.1							

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	49.23	TPH	4350	btu / lb	428,308,531	Btu / hr	92.55%
TDF	1.11	tph	15500	btu / lb	34,498,915	Btu / hr	7.45%
Total Heat Input:					462,807,446		100.00%

Start Time 2/19/20 15:50
End Time 2/19/20 16:56

Run #:	3	% opacity	Steam Load	Bark	TDF	Boiler Outlet O2	Time Soot blowing during Run	EP Field 1		EP Field 2		EP Field 3	
								Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
								kV	MA	kV	MA	kV	MA
		%	mpph	tph	tph	%	min	37ev0088.pv	37ea0088.pv	37ev0089.pv	37ea0089.pv	37ev0090.pv	37ea0090.pv
Start Time	End Time	37al293b.pv	37cf278.pv	c2bf_n.pv	13sc001.pv	37A1298.pv	8	25.6	262.8	27.4	428.8	25.0	347.8
2/19/20 15:50	2/19/20 15:56	2.5	174.8	40.2	1.1	7.6		23.1	148.7	22.5	236.3	24.0	350.3
2/19/20 15:56	2/19/20 16:02	12.6	232.8	50.4	1.1	6.7		20.8	101.1	22.1	174.1	24.3	379.4
2/19/20 16:02	2/19/20 16:08	4.7	217.4	54.3	1.1	9.3		22.4	135.5	21.4	187.2	22.5	306.6
2/19/20 16:08	2/19/20 16:14	6.1	166.0	40.2	1.1	9.6		23.1	152.5	24.6	216.0	25.0	335.9
2/19/20 16:14	2/19/20 16:20	1.8	150.9	35.6	1.1	10.1		23.7	164.9	25.7	286.6	25.0	325.6
2/19/20 16:20	2/19/20 16:26	1.3	147.5	35.9	1.1	10.7		25.3	223.3	26.8	421.0	25.0	313.1
2/19/20 16:26	2/19/20 16:32	0.7	153.0	36.6	1.1	10.0		25.3	242.2	25.6	318.3	24.3	291.3
2/19/20 16:32	2/19/20 16:38	1.6	190.9	42.5	1.1	8.7		22.3	125.3	22.1	215.5	21.3	224.1
2/19/20 16:38	2/19/20 16:44	3.9	210.7	50.9	1.1	8.6		21.4	113.1	20.6	156.5	21.7	226.1
2/19/20 16:44	2/19/20 16:50	9.3	168.2	39.2	1.1	9.6		22.2	145.0	21.3	178.9	24.1	299.2
2/19/20 16:50	2/19/20 16:56	3.7	174.5	41.6	1.1	10.0		23.2	164.9	23.8	256.3	23.8	309.0
	Average	4.4	180.6	42.5	1.1	9.2							

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	42.49	TPH	4350	btu / lb	369,634,234	Btu / hr	91.26%
TDF	1.14	tph	15500	btu / lb	35,382,847	Btu / hr	8.74%
Total Heat Input:					405,017,081		100.00%



CONDITION 2

New-Indy Catawba
Catawba, SC
No. 2 CB
Condition 2

F-factor
Bark= 9600
TDF= 10260
Oil = 9190

Fuel Feed Calculations

Run #	Heat Input				Percent Heat Input				F-Factor
	Bark	TDF	Oil	Total	Bark	TDF	Oil	Total	
	(MMBtu/hr)				(%)				
1	386.4 ✓	35.4 ✓	169.7 ✓	591.51	65.3% ✓	6.0% ✓	28.7% ✓	100.0%	9522 ✓
2	377.2 ✓	35.4 ✓	209.1 ✓	621.68	60.7% ✓	5.7% ✓	33.6% ✓	100.0%	9500 ✓
3	327.9 ✓	35.4 ✓	224.3 ✓	587.64	55.8% ✓	6.0% ✓	38.2% ✓	100.0%	9483 ✓
Average									9502 ✓

AB-Sr-5/14

New-Indy Catawba
 Catawba, SC
 No. 2 CB
 Condition 2

F-factor
 Bark= 1920
 TDF= 1800
 Oil = 1420

Fuel Feed Calculations

Run #	Heat Input				Percent Heat Input				F-Factor
	Bark	TDF	Oil	Total	Bark	TDF	Oil	Total	
	(MMBtu/hr)				(%)				
1	386.4	35.4	169.7	591.51	65.3%	6.0%	28.7%	100.0%	1769 ✓
2	377.2	35.4	209.1	621.68	60.7%	5.7%	33.6%	100.0%	1745 ✓
3	327.9	35.4	224.3	587.64	55.8%	6.0%	38.2%	100.0%	1722 ✓
Average									1745

ADG SHU ✓

CB2 - Test Condition 2 - Bark, TDF, and Fuel Oil

Start Time	2/20/20 10:33
End Time	2/20/20 11:41

Run #:	1	% opacity	Steam Load	Bark	Oil	TDF	Boiler Outlet	Time Soot blowing during Run	EP Field 1		EP Field 2		EP Field 3	
									Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
Start Time	End Time	%	mpph	tph	gpm	tph	%	min	kV	MA	kV	MA	kV	MA
2/20/20 10:33	2/20/20 10:39	33.0	320.4	47.2	20.6	1.1	6.5	0	37ev0088.pv	37ea0088.pv	37ev0089.pv	37ea0089.pv	37ev0090.pv	37ea0090.pv
2/20/20 10:39	2/20/20 10:45	10.2	305.1	47.1	18.8	1.1	8.1		19.9	54.8	23.6	75.9	20.4	108.2
2/20/20 10:45	2/20/20 10:51	5.7	282.3	43.4	18.7	1.1	8.9		22.9	85.5	21.8	87.0	20.0	118.6
2/20/20 10:51	2/20/20 10:57	5.8	271.5	42.1	18.7	1.1	9.1		23.3	107.3	21.6	126.7	20.6	165.7
2/20/20 10:57	2/20/20 11:03	5.9	258.5	37.7	18.6	1.1	9.0		21.9	95.7	22.5	128.3	20.2	121.9
2/20/20 11:03	2/20/20 11:09	5.8	276.8	41.9	18.7	1.1	8.8		23.3	125.8	22.9	145.3	19.7	94.4
2/20/20 11:09	2/20/20 11:15	21.3	293.0	43.5	19.4	1.1	7.4		23.5	120.6	23.1	140.6	21.3	150.3
2/20/20 11:15	2/20/20 11:21	21.3	304.0	46.2	18.9	1.1	7.6		21.9	85.3	20.0	92.8	19.0	101.1
2/20/20 11:21	2/20/20 11:27	15.5	324.9	52.4	19.1	1.1	7.6		24.0	99.3	20.2	86.1	19.0	97.7
2/20/20 11:27	2/20/20 11:33	9.1	289.7	43.2	19.3	1.1	7.8		29.1	94.3	21.7	79.4	17.7	75.6
2/20/20 11:33	2/20/20 11:39	15.5	298.4	44.7	19.5	1.1	7.9		22.8	104.7	23.3	126.7	19.8	97.7
2/20/20 11:39	2/20/20 11:45	11.3	288.3	43.6	19.3	1.1	8.6		25.0	115.2	23.8	113.6	20.2	112.9
Average		13.4	292.7	44.4	19.1	1.1	8.1		22.4	94.9	23.2	133.2	19.1	81.7
									23.3	97.0	22.3	111.3	19.8	110.5

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	44.41	TPH	4350	btu / lb	386,382,241	Btu / hr	65.32%
Oil	19.11	GPM	148000	btu / gal	169,739,515	Btu / hr	28.70%
TDF	1.14	tph	15500	btu / lb	35,390,160	Btu / hr	5.98%
Total Heat Input:					591,511,916		100.00%

Start Time	2/20/20 12:40
End Time	2/20/20 13:47

Run #:	2	% opacity	Steam Load	Bark	Oil	TDF	Boiler Outlet	Time Soot blowing during Run	EP Field 1		EP Field 2		EP Field 3	
									Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
Start Time	End Time	%	mpph	tph	gpm	tph	%	min	kV	MA	kV	MA	kV	MA
2/20/20 12:40	2/20/20 12:46	9.6	342.2	49.1	23.2	1.1	7.6	0	37ev0088.pv	37ea0088.pv	37ev0089.pv	37ea0089.pv	37ev0090.pv	37ea0090.pv
2/20/20 12:46	2/20/20 12:52	12.5	348.6	52.3	22.6	1.1	7.7		21.4	75.0	22.8	163.9	25.0	216.8
2/20/20 12:52	2/20/20 12:58	7.1	322.1	46.7	22.9	1.1	8.1		20.8	63.6	22.4	136.0	25.0	222.3
2/20/20 12:58	2/20/20 13:04	7.6	315.1	43.8	23.8	1.1	7.9		21.4	76.4	21.1	133.2	24.0	232.0
2/20/20 13:04	2/20/20 13:10	8.5	316.9	43.8	23.8	1.1	7.6		23.9	108.6	23.2	115.2	25.0	220.3
2/20/20 13:10	2/20/20 13:16	5.7	303.0	40.8	23.8	1.1	8.2		21.4	69.3	24.5	138.8	25.0	199.9
2/20/20 13:16	2/20/20 13:22	9.6	305.6	40.5	24.0	1.1	8.1		20.9	88.3	25.6	197.7	25.0	208.8
2/20/20 13:22	2/20/20 13:28	11.8	305.2	41.1	23.8	1.1	8.0		21.1	63.6	24.1	127.9	24.2	171.6
2/20/20 13:28	2/20/20 13:34	10.7	305.4	41.4	23.7	1.1	8.0		21.5	57.2	23.6	122.6	24.2	161.4
2/20/20 13:34	2/20/20 13:40	9.7	303.5	40.7	23.7	1.1	8.1		22.0	59.5	23.8	116.5	25.0	195.5
2/20/20 13:40	2/20/20 13:46	11.9	303.6	40.9	23.6	1.1	7.8		21.7	58.6	23.0	108.4	23.3	154.0
2/20/20 13:46	2/20/20 13:52	27.3	294.1	39.2	23.7	1.1	7.5		20.4	52.7	21.9	98.3	23.7	164.1
Average		11.0	313.8	43.4	23.5	1.1	7.9		18.7	52.8	20.5	84.7	19.8	125.3
									21.3	68.5	23.0	128.6	24.1	189.3

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	43.36	TPH	4350	btu / lb	377,241,458	Btu / hr	60.68%
Oil	23.54	GPM	148000	btu / gal	209,060,945	Btu / hr	33.63%
TDF	1.14	tph	15500	btu / lb	35,379,580	Btu / hr	5.69%
Total Heat Input:					621,681,983		100.00%

Start Time	2/20/20 14:22
End Time	2/20/20 15:30

Run #:	3	% opacity	Steam Load	Bark	Oil	TDF	Boiler Outlet	Time Soot blowing during Run	EP Field 1		EP Field 2		EP Field 3	
									Sec Voltage	Sec Current	Sec Voltage	Sec Current	Sec Voltage	Sec Current
Start Time	End Time	%	mpph	tph	gpm	tph	%	min	kV	MA	kV	MA	kV	MA
2/20/20 14:22	2/20/20 14:28	4.8	305.1	40.2	23.5	1.1	7.9	7	37ev0088.pv	37ea0088.pv	37ev0089.pv	37ea0089.pv	37ev0090.pv	37ea0090.pv
2/20/20 14:28	2/20/20 14:34	5.0	299.4	38.9	24.2	1.1	7.7		22.9	119.4	26.2	238.1	24.2	255.9
2/20/20 14:34	2/20/20 14:40	5.1	312.8	40.5	24.5	1.1	7.8		24.4	124.8	27.2	239.3	25.0	220.7
2/20/20 14:40	2/20/20 14:46	4.4	308.2	40.6	24.5	1.1	7.8		23.3	104.5	28.5	252.1	25.0	199.0
2/20/20 14:46	2/20/20 14:52	6.7	301.7	38.5	24.3	1.1	7.4		23.4	110.6	28.9	290.1	25.0	193.0
2/20/20 14:52	2/20/20 14:58	9.6	313.4	40.6	24.3	1.1	7.1		23.2	83.3	29.2	269.0	25.0	174.4
2/20/20 14:58	2/20/20 15:04	7.3	315.9	42.2	24.4	1.1	7.1		21.9	54.5	27.0	200.6	25.0	177.5
2/20/20 15:04	2/20/20 15:10	5.1	300.4	38.3	24.6	1.1	8.0		22.5	55.4	27.5	249.7	25.0	208.9
2/20/20 15:10	2/20/20 15:16	10.5	308.5	38.3	26.2	1.1	7.4		21.8	72.5	26.9	296.3	25.0	221.9
2/20/20 15:16	2/20/20 15:22	9.0	292.3	35.1	26.6	1.1	7.5		20.9	55.9	24.3	140.9	25.0	185.9
2/20/20 15:22	2/20/20 15:28	19.1	283.4	29.3	28.1	1.1	7.0		21.3	60.6	25.1	195.4	25.0	204.0
2/20/20 15:28	2/20/20 15:34	10.4	292.6	30.4	27.8	1.1	6.7		21.8	56.4	24.4	140.1	24.0	167.1
Average		7.6	302.8	37.7	25.3	1.1	7.4		19.6	55.5	23.5	115.3	24.3	167.7
									22.3	79.4	26.6	219.0	24.8	198.0

Fuel	Ave. Value	Unit	Heat Value	Unit	Heat Input	Unit	% Heat Input
Bark	37.69	TPH	4350	btu / lb	327,923,051	Btu / hr	55.80%
Oil	25.26	GPM	148000	btu / gal	224,348,767	Btu / hr	38.18%
TDF	1.14	tph	15500	btu / lb	35,368,467	Btu / hr	6.02%
Total Heat Input:					587,640,285		100.00%



APPENDIX H
FUEL SAMPLES
LABORATORY ANALYSIS



March 17, 2020

Service Request No:T2000350

Temp Simpkins
Weston Solutions, Incorporated
1625 Pumphrey Ave.
Auburn, AL 36832

Laboratory Results for: New Indy Catawba Boiler MACT

Dear Temp,

Enclosed are the results of the sample(s) submitted to our laboratory February 25, 2020
For your reference, these analyses have been assigned our service request number **T2000350**.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 7102. You may also contact me via email at Wendy.Hyatt@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Wendy Hyatt
Client Services
Manager

ADDRESS 4208 S Santa Rita Avenue, Tucson, AZ 85714
PHONE +1 520 573 1061 | FAX +1 520 623 9218
ALS Group USA, Corp.
dba ALS Environmental

4208 S.Santa Rita Ave.
Tucson, AZ 85714
T: +1 520 573 1061
www.alsglobal.com



Sample Receipt Form

T2000350 **5**

Weston Solutions, Incorporated
New Indy Boiler MACT



Client/Project: **Weston Solutions** Work Order Number:

Received by: **Cynthia Vroegh** Date & Time: **2/25/20 1028** Matrix: **Solid/Non-Aq**

Samples were received via?: **UPS** Samples were received in: **Cooler**

Were custody seals on containers? Yes No NA If yes, how many and where? _____

If present were custody seals intact? Yes No If present, were they signed and dated? Yes No

Arrival Temp C	Temp Blank C	Tracking Number
Ambient	NA	5133 4446 6131

Packing material used? **Bubble Wrap** **Bags**

Did all the bottles arrive in good condition (unbroken)? Yes No NA If No, record comments below

Did all sample labels and tags agree with COC? Yes No NA If No, record discrepancies below

Were all the appropriate containers and volumes received for the tests indicated? Yes No NA

Are samples received deemed acceptable? Yes No

Comments:
18 small ziploc bags and 3 - 40ml vials

Notes, discrepancies, & resolutions:
3 - COC's

As a part of ISO 17025 protocols, ALS must notify clients that the quoted analytical methods performed by ALS may have minor modifications from the methods as published. These modifications are written into our Standard Operating Procedures and do not impact the quality of the data. Receipt of this document will be considered an acceptance of the procedures used by the laboratory for analysis unless notified by the client. Modifications may include, but are not limited to:

- The analysis of a sample matrix that differs from that stated in the published method (example - ASTM D5865 Standard Test Method for Gross Calorific Value of Coal and Coke is used for other matrices such as biomass, Tire Derived Fuel, etc.).
- Analyzing a sample mass that differs from those in the published method (example - to accommodate samples with high concentrations of analyte, samples of limited volume, or to comply with the instrument manufacturer's operating guidelines).
- Instruments used for the analysis may differ from those listed in the published method (example - using ICP-OES when the method references flame Atomic Absorption Spectroscopy)



Client: Weston Solutions, Incorporated
 1625 Pumphrey Ave.
 Auburn, AL 36832
Attn: Temp Simpkins
Project: New Indy Catawba Boiler MACT

Date Received: February 25, 2020

Certificate of Analysis

Sample ID:	Sample Date and Time:	Lab #:	Moisture, Total D3173 wt%	Chlorine 5050/9056 Moist. Free mg/kg	Mercury D6722 Moist. Free ppb	Heating Value		Heating Value		Wire Content D6700 Air Dried wt%
						Wire Free E711 As Received BTU/lb	Moist. Free BTU/lb	With Wire calculated As Received BTU/lb	Moist. Free BTU/lb	
CB1 Run 1	2/18/20	n/a	52.78	159	24	4,122	8,728	n/a	n/a	n/a
CB1 Run 1	2/18/20	n/a	1.41	452	14	15,740	15,965	12,670	12,851	19.5
CB1 Run 2	2/18/20	n/a	54.80	69	14	3,953	8,745	n/a	n/a	n/a
CB1 Run 2	2/18/20	n/a	1.31	406	21	15,649	15,856	12,096	12,256	22.7
CB1 Run 3	2/18/20	n/a	51.49	99	16	4,013	8,272	n/a	n/a	n/a
CB1 Run 3	2/18/20	n/a	1.27	529	13	15,540	15,740	12,457	12,617	19.8
CB2 Run 1	2/19/20	n/a	53.44	194	26	3,971	8,529	n/a	n/a	n/a
CB2 Run 1	2/19/20	n/a	2.38	472	10	15,438	15,814	12,253	12,551	20.6
CB2 Run 2	2/19/20	n/a	55.04	66	14	4,034	8,974	n/a	n/a	n/a
CB2 Run 2	2/19/20	n/a	1.74	480	12	15,520	15,795	12,268	12,485	21.0
CB2 Run 3	2/19/20	n/a	51.63	<47	14	4,358	9,009	n/a	n/a	n/a
CB2 Run 3	2/19/20	n/a	1.64	430	16	15,558	15,818	12,732	12,944	18.2
CB2 Run 4	2/20/20	n/a	55.85	128	21	3,657	8,282	n/a	n/a	n/a
CB2 Run 4	2/20/20	n/a	1.95	364	14	15,505	15,813	12,522	12,770	19.2
CB2 Run 5	2/20/20	n/a	54.49	212	29	3,699	8,127	n/a	n/a	n/a
CB2 Run 5	2/20/20	n/a	2.52	373	17	15,416	15,815	12,266	12,584	20.4



Client: Weston Solutions, Incorporated
 1625 Pumphrey Ave.
 Auburn, AL 36832
Attn: Temp Simpkins
Project: New Indy Catawba Boiler MACT

Date Received: February 25, 2020

Certificate of Analysis

Sample ID:	Sample Date and Time:	Lab #:	Moisture, Total D3173 wt%	Chlorine 5050/9056 Moist. Free mg/kg	Mercury D6722 Moist. Free ppb	Heating Value Wire Free E711		Heating Value With Wire calculated		Wire Content D6700 Air Dried wt%
						As Received BTU/lb	Moist. Free BTU/lb	As Received BTU/lb	Moist. Free BTU/lb	
CB2 Run 6	2/20/20	n/a	59.28	244	29	3,468	8,515	n/a	n/a	n/a
CB2 Run 6	2/20/20	n/a	2.07	352	15	15,695	16,027	13,660	13,949	13.0

Notes:
 Samples were air dried then ground to < 1 mm prior to analysis.



Client: Weston Solutions, Incorporated
 1625 Pumphrey Ave.
 Auburn, AL 36832
Attn: Temp Simpkins
Project: New Indy Catawba Boiler MACT

Date Received: February 25, 2020

Certificate of Analysis

Sample ID:	Sample Date and Time:	Lab #:	Water by Karl Fischer E1064 wt%	Heating Value (Gross) D5865 As Received BTU/lb	Chlorine 5050/9056 As Received mg/kg	Mercury D6722 As Received ppb
CB2 Run 4 Oil	2/20/20 n/a	T2000350-019	10.55	16,211	64	1
CB2 Run 5 Oil	2/20/20 n/a	T2000350-020	8.74	16,971	63	<1
CB2 Run 6 Oil	2/20/20 n/a	T2000350-021	7.54	17,012	81	<1



APPENDIX I

SOOT BLOWING CALCULATIONS

CLIENT/SUBJECT New Indy Catawba W.O. NO. 15730.001.003

TASK DESCRIPTION Soot Blowing Calculations - CB1 TASK NO. _____

PREPARED BY A. Bryant DEPT _____ DATE 3/16/20

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY
DEPT _____ DATE _____

Runs 1 and 3 = No Soot
 Run 2 = 0.18 hr soot (A)
 Total No Soot = 0.82 hr soot (B)

(S) Total Soot = 1hr
 (B) Total No Soot = 23hr

$$PMF_{avg} = PMF_{sbr} \frac{(A+B)S}{AR} + PMF_{nosb} \left[\frac{R-S}{R} - \frac{BS}{AR} \right]$$

$$PMF_{avg} = 0.013 \frac{(0.18 + 0.82)1}{(0.18)(23)} + 0.016 \left[\frac{23-1}{23} - \frac{(0.82)(1)}{(0.18)(23)} \right]$$

$$PMF_{avg} = 0.013 (0.242) + 0.016 [0.957 - 0.198]$$

$$PMF_{avg} = 0.003 + 0.012$$

$$PMF_{avg} = 0.015 \text{ lb/MMBtu}$$

SH

Run 1 = 0.019 > no sootblowing

Run 2 = 0.013 > sootblowing (PMF_{sbr})

Run 3 = 0.013 > no sootblowing

Runs 1 & 3 no sootblowing avg.

0.016
 (PMF_{nosb})

CLIENT/SUBJECT New Indy Catawba W.O. NO. 15730.001.003

TASK DESCRIPTION Soot Blowing Calculations- CB 2 - Cond. 1 TASK NO. _____

PREPARED BY A. Bryant DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____

Runs land 2 = No Soot
Run 3 = 0.13 hr Soot (A)
Total No Soot = 0.87 hr (B)

(S) Total Soot = 1hr
(R) Total NoSoot = 23hr

$$PMF_{avg} = PMF_{sbr} \frac{(A+B)S}{AR} + PMF_{nosb} \left[\frac{R-S}{R} - \frac{BS}{AR} \right]$$

$$PMF_{avg} = 0.100 \frac{(0.13+0.87)1}{(0.13)(23)} + 0.556 \left[\frac{23-1}{23} - \frac{(0.87)(1)}{(0.13)(23)} \right]$$

$$PMF_{avg} = 0.100 (0.334) + 0.556 [0.957 - 0.291]$$

$$PMF_{avg} = 0.033 + 0.370$$

$$PMF_{avg} = 0.403 \text{ lb/MMBtu}$$

SH

Run 1 = 0.366 > avg = 0.556 (PMF_{nosb})
Run 2 = 0.745 > no sootblowing

Run 3 = 0.100 > sootblowing (PMF_{sbr})

CLIENT/SUBJECT New Indy Catawba W.O. NO. 15730.001.003

TASK DESCRIPTION Soot Blowing Calculations - CB2 - Cond. 2 TASK NO. _____

PREPARED BY A. Bryant DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY
DEPT _____ DATE _____

Runs 1 and 2 = No Soot (S) Total Soot = 1 hr
 Run 3 = 0.12 hr Soot (A) (R) Total No Soot = 23 hr
 Total No Soot = 0.88 hr (B)

$$PMF_{avg} = PMF_{sbr} \frac{(A+B)S}{AR} + PMF_{nosb} \left[\frac{R-S}{R} - \frac{BS}{AR} \right]$$

$$PMF_{avg} = 0.121 \frac{(0.12+0.88)1}{(0.12)(23)} + 0.181 \left[\frac{23-1}{23} - \frac{(0.88)(1)}{(0.12)(23)} \right]$$

$$PMF_{avg} = 0.121 (0.362) + 0.181 [0.957 - 0.319]$$

$$PMF_{avg} = 0.044 + 0.115$$

$$PMF_{avg} = 0.159 \text{ lb/MMBtu}$$

SH

Run 1 = 0.257
 Run 2 = 0.105
 Run 3 = 0.121

} avg = 0.181 (PMF_{nosb})
 no sootblowing

} Sootblowing (PMF_{sbr})

From: Mike Swanson <Mike.Swanson@new-indycb.com>
Sent: Monday, March 16, 2020 10:48 AM
To: Bryant, Ashley
Subject: RE: New Indy Catawba CB1 and CB2 Question

**** External Email ****
Ashley,

That is still correct. Please let me know if you require any additional information. Thanks!

Mike Swanson
Environmental Manager
New-Indy Catawba LLC
5300 Cureton Ferry Road
Catawba, SC 29704
mike.swanson@new-indycb.com
803-981-8010



From: Bryant, Ashley [mailto:Ashley.Bryant@WestonSolutions.com]
Sent: Monday, March 16, 2020 11:42 AM
To: Mike Swanson
Subject: New Indy Catawba CB1 and CB2 Question

Mike,

I am working on the New Indy Catawba report, and I need some additional information from you to calculate PM weighted for soot blowing. In the production data you sent, I have the total hours of soot blowing during the test. However, the soot blowing calculation calls for the total hours of soot blowing and no soot blowing in a 24 hour period. In 2017, you told us that the CB1 and CB2 both average 1 hour of soot blowing in a 24 hour period. Can you verify that this is still correct before I do the calculations? Thanks, and let me know if you need any other information from me.

Ashley



APPENDIX J EPA APPROVAL LETTER



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

March 20, 2020

Mike Swanson
Environmental Manager
New-Indy Catawba, LLC
5300 Cureton Ferry Road, P.O. Box 7
Catawba, South Carolina 29704

Dear Mr. Swanson:

On October 14, 2019, New-Indy Catawba, LLC (New-Indy) submitted a letter to the South Carolina Department of Health and Environmental Control (SCDHEC), Bureau of Air Quality (Bureau) concerning an alternative monitoring plan (AMP) for the No. 2 Combination Boiler at its paper mill in Catawba, South Carolina. The Bureau forwarded this letter to the United States Environmental Protection Agency Region 4 on October 21, 2019. As requested by the Bureau, our response to the AMP is being provided directly to New-Indy. New-Indy provided additional information regarding the AMP by email on December 4, 2019, and December 27, 2019. Based upon our review, the AMP for the No. 2 Combination Boiler is acceptable. Details regarding the AMP and the basis for our determination are provided in the remainder of this letter.

The No. 2 Combination Boiler is subject to the National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD (Subpart DDDDD). New-Indy requested an AMP for determining the maximum fuel input of chlorine and mercury under 40 CFR 63.7540(a)(2)(ii). 40 CFR 63.7520(c) requires facilities to "... conduct performance tests at representative operating load conditions while burning the type of fuel or mixture of fuels that has the highest content of chlorine and mercury."

The No. 2 Combination Boiler has approval to combust bark, tire-derived fuel (TDF), No. 6 fuel oil, natural gas, and off-grade paper generated on-site. Compliance with the maximum fuel pollutant input levels of mercury and chlorine, as determined by 40 CFR 63.7530(b)(1) through (2), specify compliance on a pounds per million British thermal unit (lb/MMBtu) basis. New-Indy has determined the worst-case operating scenario is firing bark and TDF only, since this scenario constitutes the highest input of chlorine and mercury.

The full operating load for the No. 2 Combination Boiler can only be achieved when firing bark and TDF supplemented with No. 6 fuel oil. In order to achieve full operating load while testing, New-Indy proposed to conduct a stack test while firing bark, TDF, and No. 6 fuel oil but subtract

the heat input from fuel oil when calculating the pollutant concentrations on a lb/MMBtu basis. Under the AMP, fuel samples will be collected during the performance test and analyzed for the required pollutants (chlorine and mercury) and heating value. Fuel usage will also be recorded during the performance test, and the following equation will be used to calculate mercury emission rates:

$$\text{Continuous Hg Compliance Calculation} = \frac{\text{Bark Hg (lbs)} + \text{TDF Hg (lbs)} + \text{No.6 Fuel Oil Hg (lbs)}}{\text{Bark Heat Input (MMBtu)} + \text{TDF Heat Input (MMBtu)}}$$

The equation used for calculating chlorine emission rates is similar to the equation shown for mercury; except chlorine will replace mercury in the equation when calculating values for chlorine. Following the performance test, fuel usage records will be maintained according to 40 CFR 63.7540(a)(2) in order to demonstrate that the mercury and chlorine contained in the fuel combusted in the boiler do not exceed the input for these pollutants during performance testing.

This approach for calculating emissions will demonstrate compliance with the highest input (lb/MMBtu) of chlorine and mercury as provided in 40 CFR 63.7540(a)(2)(ii). The proposed calculations will conservatively represent the highest input amounts of chlorine and mercury because they account for the emissions resulting from the combustion of No. 6 fuel oil without providing credit for the heat input associated with this fuel. Since this is a conservative approach for calculating mercury and chlorine input rates, it will provide adequate assurance of compliance with Subpart DDDDD and is acceptable to the EPA. This determination only applies to the No. 2 Combination Boiler located at the New-Indy Catawba mill in Catawba, SC.

This response was coordinated with the EPA's Office of Enforcement and Compliance Assurance and Office of Air Quality Planning and Standards. If you have any questions about the above, please contact Seneca Anderson of the EPA Region 4 at (404) 562-9050 or anderson.seneca@epa.gov.

Sincerely,



Kenneth L. Mitchell, Ph.D.
Acting Director
Air and Radiation Division

cc: Bryan Nichols, SCDHEC

**END
OF
DOCUMENT**